

## التماسك المرجعي في محادثات الذكاء الاصطناعي : دراسة عن الاحالة القبلية والاحالة البعدية

طيبة خالد شهاب

جامعة ذي قار / كلية التربية للعلوم الانسانية / قسم اللغة الانجليزية

[TeebaKhalidShihab@utq.edu.iq](mailto:TeebaKhalidShihab@utq.edu.iq)

### الملخص

المرجع يعني العلاقة بين الكلمة والشئ الذي يستخدم لوصفه يمكن ان يكون محددًا والذي يشير الى شئ معين او عامًا والذي يعني فئة كاملة من الاشياء دون تحديد. يعد استخدام الاحالة القبلية والاحالة البعدية كأدوات تماسك الموضوع الرئيسي لهذه الدراسة التي تبحث عن التماسك المرجعي في محادثات الذكاء الاصطناعي , وتسعى الى دراسة الطرق التي تدعم بها هذه الانظمة التماسك في المحادثة التي ينتجها الذكاء الاصطناعي. ومع ذلك , تتكون العينة من ثلاثين عينة محادثة مختارة بعناية بين المستخدمين والذكاء الاصطناعي. في هذا الصدد , تظهر النتائج ان الاحالة القبلية التي تساعد في الحفاظ على الاستمرارية وتقليل التكرار هي الاداة الأكثر استخدامًا , وهذا يعني انها تحدث عادة من خلال الضمائر الشخصية وأسماء الاشارة. من ناحية أخرى فان الاحالة البعدية هي الاقل شيوعًا ويرتبط بأنماط جمل أكثر تعقيدًا تخدم اغراضًا مثل تنظيم المعلومات والتأكيد. وفقًا للنتائج , يحسن الذكاء الاصطناعي التماسك والوضوح باستخدام التماسك المرجعي بطريقة متشابهة للتواصل اللغوي بين البشر. بالإضافة الى ذلك , تؤكد هذه الدراسة على الحاجة الى التماسك في التواصل الناجح وتبين كيف يمكن استخدام اطر التحليل المحادثة للغة المولدة بالذكاء الاصطناعي. وهذا يعني ان هذه الدراسة تهدف الى تقييم دقة التماسك النصي الناجم عن هذه المراجع في تقليل الغموض وزيادة فهم المستخدم والآلة.

الكلمات المفتاحية : المراجع , ادوات التماسك , التماسك المرجعي , الاحالة , الاستشهاد , الذكاء الاصطناعي

## Referential Cohesion in Chat GPT Conversations: A Study of Anaphora Cataphora

Teeba Khalid Shihab

University of Thi- Qar, College of Education for Humanities, Dep. Of English

[TeebaKhalidShihab@utq.edu.iq](mailto:TeebaKhalidShihab@utq.edu.iq)

### Abstract

Reference means the relation between a word and thing it is used to describe. It can be specific which refers to particular thing or generic which means a whole class of things without any particular. The use of anaphora and cataphora as a cohesive device is the main subject of this study, which investigates referential cohesion in Chat GPT interactions. It seeks to examine the ways in which these systems support coherence in conversation produced by AI. However, thirty carefully chosen chat samples between users and Chat GPT make up the data. In this respect, the results show that anaphora which helps preserve continuity and minimize repetition, is the most commonly employed referential device. It means, it is typically occurring through personal pronoun and demonstratives. Cataphora, on the other hand, is less common and is linked to more complex sentence patterns serving purposes like information organization and emphasis. According to the findings, Chat GPT improves coherence and clarity by using referential cohesiveness in way that are similar to human communication. Additionally, this study emphasizes the need of cohesiveness in successful communication and shows how conversation analysis frameworks can be used to AI generated language. That means, this study aims to assess the accuracy of textual coherence arising from these references in reducing ambiguity increasing user- machine comprehension.

**Keywords:** References , Cohesive devices , Referential cohesion, Anaphora, Cataphora, Chat GPT.

## 1. Introduction

This study examines the linguistic process of cataphora and anaphora in artificial intelligence dialogue, with a particular emphasis on the Chat GPT model. That means, the goal of this work is to find out how these occurrences help the model achieve referential cohesion, which allows it to manage context and preserve semantic continuity through long interactions. The concept of cohesion is used to explain how individual sentences are connected to form unified and interpretable text. That means, it focuses on the linguistic ties that create continuity of meaning (Halliday & Hassan, 1976: 32). This explanation shows that, cohesion can be defined as “a system of semantic relations expressed through grammatical relations and lexical elements which together enhance the overall texture of a text” (ibid.). By means of this, referential cohesiveness is crucial since it allows speakers and writers to connect concepts by reference instead of repetition. In this context, the interpretation of terms whose meaning is derived from other components in the conversation context is necessary for this kind of cohesiveness (Yule, 2020:20). Furthermore, the two main referential cohesiveness processes are cataphora and anaphora. While cataphora reference gives an element whose complete significance only becomes apparent in later conversation, anaphoric reference points the readers or listeners to previously mentioned information (McCarthy, 1991:17). Within this framework, these types are essential for maintaining clarity, avoiding repetition and guaranteeing that thoughts flow naturally (ibid.). In recent years, conversational systems such as Chat GPT developed by Open AI. These systems are designed to imitate human interaction. That means, these systems rely on sophisticated neural structures that use statistical patterns to process linguistic input and produce output. As a result, a crucial component is assessing their total communicative usefulness in their capacity to preserve referential coherence during several changes of conversation (Brown et al., 2020: 117). In light of this, anaphoric reference is the most common type of coherence. That means, Empirical research has shown that anaphora is preferred over cataphora in texts since of its function in maintaining topic continuity and avoiding repetition. In contrast, cataphora, although less frequent since it is used to create emphasis or introduce new referents in a strategically delayed manner.

## 2. Literature Review

### 2.1. Overview of Cohesion

Linguistically, cohesion is described as certain elements that are dependent on specific structures that every text must have. These elements of texts are very distinct from those needed in the structure of a single sentence or ties that are within the text (Yule, 2010: 143). In this respect, the linguistic elements that link ideas and phrases together in a text to facilitate the reader's comprehension of the writer's point of view are referred to as cohesiveness. That means, cohesion is a semantic concept, it indicates to the text's internal relationships of meaning. As a result, when one discourse element's interpretation depends on another (Halliday & Hassan, 1976: 4). As a result, cohesion is the central component of the language system. That means it has an impact on the language's internal resources such as ellipsis and references (ibid.: 5)

According to Hoey (1991, 1:3) defines cohesiveness as “the certain words or grammatical features of a sentence to its predecessors and successors in a text”. In another words, the text is cohesive when the reader must look at and comprehend the surrounding phrases in order to understand certain of its sentence elements. In contrast coherence is described as “the overt linguistically- signaled relationship” (Widdowson, 1987: 31). In light of this, one fundamental principle in language is that expresses more general meaning, while vocabulary expresses more specialized ones. As a result, in term of the cohesive relationships that fit into some patterns, cohesion is partially communicated through Grammar. In this respect, grammatical cohesiveness is the term used in this situation. On the other hand, it is referred to as lexical cohesion when it is partially conveyed through vocabularies. As illustrated in the example below (Halliday & Hassan, 1976:4):

1. “Wash and core six cooking apples put them into fireproof dish”

This example shows that the term “them” implies something other than itself in order to be understood. “The six cooking apples” mentioned in the previous phrase are the presupposition of the word “them”. As a result, the coherence between the two terms is clarified by the presupposition, which is the only method for creating entire texts (ibid.). To clarify this, there are two types of cohesion: grammatical cohesion which includes conjunction, ellipsis, substitution, and references. In this respect, the study sheds light on this type of cohesive especially reference one. The second one is lexical cohesion which involves collocation and reiteration (ibid.). As the figure below illustrates:

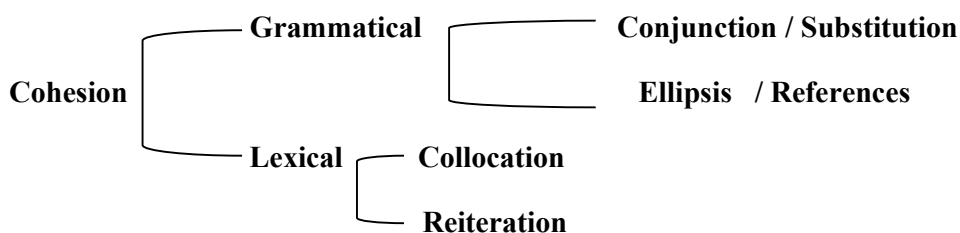


Figure (1) Cohesive Categories (ibid.)

## 2.2.Reference as a Cohesive Device

One of the key coherent strategies that support a text’s logical structure and comprehension is reference since it includes the use of language terms that refers to other elements either inside or beyond the conversation (Finch, 2005: 167). To clarify this, reference is the relationship between words and things activities, properties, etc... That means, words differ in the degree of reference they allow. So, for example proper nouns, or names are highly referential such as London or Gloria refer to a particular place or person. In this respect, when a word makes reference to another textual element, it is called reference (ibid.).

According to Halliday and Hassan (1976: 7), reference allows readers to recognize individuals, objects, and ideas across sentences creating semantic connections between textual units. It means, reference increases the text's readability and coherence while reducing needless repetition (ibid.). In light of this, reference is a semantic cohesive device that includes several dependent elements; this implies that, within the context of the text they are not interpreted semantically on their own but rather refer to something else for their interpretation (ibid.: 31).

To clarify this, reference happens whenever something suggests that the identification of what is being discussed can be determined from the immediate context. As a result, pronouns and determiners are therefore both reference items (Hoey, 1991: 5). It means, the items of reference are: personal pronoun, demonstrative, and comparatives. As the examples below illustrate (Halliday & Hassan, 1976: 31):

1. "Three blind mice, three blind mice".  
"See how they run! See how they run"
2. "Doctor Foster went to Gloucester in a shower of rain. He stopped in the puddle right up to his middle and never went there again"
3. "There were two wrens upon a tree".  
"Another came, and there were three.In (1) "they" refers to "three blind mice", in (2) "there" refers to "Gloucester", and in (3) "another" refers to wrens" (Halliday & Hassan, 1976:31). These items are directives and refer to the information that can be retrieved from somewhere (ibid.)

To clarify this, reference is the particular type of information that is indicated for retrieval. So, the referential meaning, or the identification of the specific object or class of objects being referred to is the information to be retrieved in the instance of reference. In this respect the cohesiveness is found in the continuity of reference. As a result, this definition indicates that reference is a semantic relation (Halliday & Hassan, 1976: 32).

However, another crucial aspect that needs to be clarified in the case of reference is the definition of "a dummy word". A dummy word is one that has no meaning on its own but may be identified and comprehended by what comes before or after it in the text (Renkma, 1993: 38). According to Halliday and Hassan (1976: 32), cohesion takes place in the continuity of reference, where the something appears twice in the text. This shows, the term 'reference' refers to the way in which writers and presenters highlight the concrete and abstract concepts they discuss (Brown & Yule, 1983:205).

### 2.3.Types of reference

Linguistically, Finch (2005: 168) states that reference can be either upward reference is known as "anaphora" which means to carry. Additionally, anaphoric reference words are those that make upward references to previous section of a text, such type of reference is considered as the most typical ones. Secondly, downward reference is known as a cataphoric reference since it refers to words that means downward in a text because "Kata" means "downwards" (ibid.).

However, reference can be divided into two types: Exophoric “situational meaning the reference item points to an object outside the text”, and Endophoric “textual meaning the reference item points to an item inside the text itself (Halliday & Hassan, 1976: 32). The second type of reference, which is Endophoric can be subdivided in to Anaphora and Cataphora (ibid.). As seen in the diagram below:

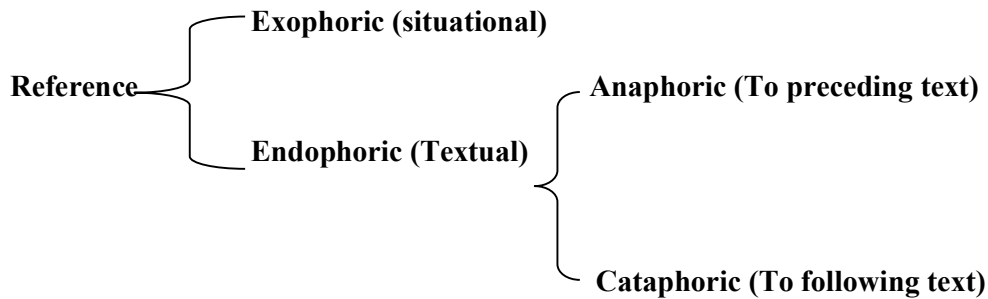


Figure (2) Types of Reference (Halliday and Hassan, 1976: 33)

In light of this, whether a reference is endophoric or exophoric, the most crucial factor to consider is that there must be a satisfied presupposition, meaning that the object being referred to must be identified in some way (ibid.).

### 2.3.1. Exophoric (situational) Reference

In this kind of reference, the antecedents of the reference of items are outside the text, meaning that the information required to understand the referential statement is not present in the text itself (ibid.: 37). So Exophoric reference contributes to the text’s creation by connecting the situational context, but it has nothing to do with the integration of two passages into a single text. Because of this, exophoric reference doesn’t directly support cohesiveness (ibid.). That means, exophoric reference must be stated in a way that take into account the situation of context in order for them to be understood. For instance:

1. She left this

In the above example, both the demonstrative ‘this’ and the pronoun ‘she’ are exophoric since they make references to things and people that are mentioned in the context (Trask, 1993: 97).

### 2.3.2. Endophoric (textual) References

This paper concentrates on this particular type of reference. By contrast to exophoric references, endophoric references are reference in text since the information required to understand the passage is already presented and accessible within the text. As a result, by connecting one section of the text to another as its antecedent, this kind of reference works cohesively (Richard et al., 1985: 12).

According to its place inside the text, the endophoric reference can be either Anaphoric or Cataphoric (ibid.). For example;

1. Tom likes ice cream, but Bill can't eat it

The pronoun 'it' refers to the word 'ice cream' which came before it. As a result, it is referred to as anaphoric reference since it makes reference to the text that comes before it (ibid.). whereas in the example below:

2. When I met her, Mary looked ill?

In this example, the pronoun 'her' refers to 'Mary' which comes before. So, this kind is referred to as cataphoric since it refers to something that comes next (ibid.).

### 2.3.1. The meaning of Anaphoric Reference

When writing or speaking, we must be aware of who or what we are discussing for multiple sentences. In order to preserve the reference, the speaker or writer will employ as many earlier expressions as possible when introducing the first entity. To put it another way, indefinite articles like "a man, a boy, a woman, etc. are used in the writer's or speaker's first introduction, whereas definite articles like "the man, the boy, the woman, etc." are used in the subsequent reference to an already introduced person or thing (Yule, 19996: 22)

The term "Anaphora" comes from Greeks and means "a carrying back" (Finch, 2000:202). According to Crystal (1997:19) defines anaphoric reference as "one way of making the identity between what is being expressed and what has already been expressed". It means that, it is a method for pointing to the previous item (ibid.). In other words, there is a connection between the anaphora and the antecedent. The following examples help to clarify the definition of anaphora (ibid.):

1. Soha went to the cinema yesterday, she didn't like film.
2. Ahmed looked out the window. The sky looked threatening, so he decided to take an umbrella

In (1) the pronoun "she" is anaphora to the antecedent 'noun phrase' 'Soha', similar to (2) the pronoun 'he' is anaphora since it refers back to the noun phrase 'Ahmed' (ibid.)

In light of this, the main purpose of anaphoric reference is to make the burden of repetitions for what has already been said short and less, in other words, to make the sentence as short and easy to understand as possible. However, occasionally the two elements of the equations, the presupposing and the presupposed elements may not occur adjacent to each other but rather far from each other. In this case, the text stretch will be problematic rather than helpful (Beagrand and Dressler, 1981:60).

### 2.3.2. The meaning of Cataphoric Reference

According to Crystal (1997: 55) states that cataphoric reference is "one way of marking identity between what is being expressed and what is about to be expressed". For example,

1. Here is the 9 o'clock news

The indicator “Here” refers cataphorically to “the9o’clock news”. In this respect, cataphoric reference is a word or phrase that indicates the occurrence of another word or phrase (Richards et al., 1985:36).

In light of this, the sole purpose of making the reader pay attention to what comes next by using a cataphoric connection is to encourage him to keep reading. That means, this can be achieved by creating expectations in the reader that go beyond what he would normally bring to his reading because of his familiarity with the language and its usage (Widdowson, 197566).

## 2.4. Devices of English Anaphora

### 2.4.1. Personal Pronouns

One of the most common type of anaphoric devices in English is personal pronouns since they refer back to previously mentioned nouns ‘antecedent’ and agree with them in number and gender (Halliday and Hassan, 1976: 34).

In light of this, when pronouns are used anaphorically, that means, when they relate to entities within the text they are seen as cohesive devices. As a result, when discussing a new person or object in English, it is usual to start with a defining noun phrase before switching to the proper pronouns (Larson,1984: 397). In other words, this technique is silent and since there are only a few objects that are salient in any given situation. That is, objects that the speaker and hearer are paying attention to use the pronouns will be sufficient to refer to the intended objects (Bosch, 1983: 57). As illustrated in this example:

1. Peter, Peter, pumpkin eater  
Had a wife and couldn’t keep her.  
He put her in a pumpkin shell  
And there he kept her very well.

The anaphoric terms ‘he’ and ‘her’ in the previous example, namely refer to ‘Peter’ and ‘his wife’ (Halliday and Hassan, 1976: 49).

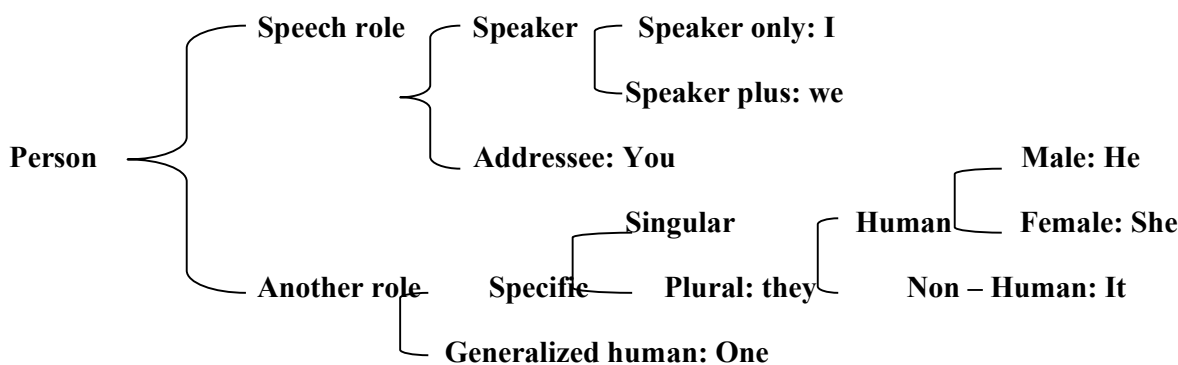


Figure (3) Personal Pronouns (Halliday and Hassan, 1976: 44).

Pronouns has no self-interpretation, it means that the reader must go elsewhere in the text for their antecedent, which may be mentioned cataphorically or anaphorically (Gramley and

Patterson,1992:188). Additionally, personal pronouns can distinguish between person, number, and grammatical relation. For instance, the pronouns ‘I’ and ‘You’ refer to the person speaking or writing and the addressee, respectively, but the person or people they refer to change depending on the context in which they are used (Hudson,2003: 315). As the diagram shows;

#### 2.4.2. Demonstrative Reference

According to Tehrani and Yaganeh (1999:56), “reference by the means of location, or scale of proximity” is an example of demonstrative reference. In other words, it is a type of pointing in which the speaker makes reference to the thing (person or object) using a certain proximity criterion these things are referred to as demonstratives since they depend on how close or far away the speaker is, refer to something locally (ibid.). additionally, the English demonstratives are ‘this, that, these, those’ (Richards et al., 185: 75). For instance;

1. Sally would climb trees; this disturbed her mother.

The demonstrative ‘this’ in the second clause of the example above refers to Sally’s tree climbing in the first clause (Hooper et al., 2000: 8). The table below illustrates how the demonstrative pronouns are divided based on their number and distance (Hurford and Heasley, 1982: 65);

Table (1) the criterion of distributing the demonstratives(ibid.)

Number / Distance	Singular	Plural
Near (close)	This	These
Distance (far)	That	Those

In this respect, these demonstratives are used anaphorically by pointing to entities that already introduce in conversation (Leech, 2006:15). To clarify this, when the speaker’s physical context is understood, words like here, there, now, and then can be understood. Whereas certain English sentences are unclear and difficult to understand because it is difficult to determine the speaker’s identity, subject matter, location, and time (Hurford and Heasley, 1982: 65). As shown in te example below;

2. They all have to do that tomorrow because they are not here now.

Many of the didactic expressions in this example ‘they, that, here, tomorrow, and how they are used (Yule,1985: 99). It means that, one characteristic of the didactic expression is that it interprets the utterance based on the location and time of their occurrence (Lyons, 1981: 170).

### 2.4.3. Substitution

According to Halliday and Hassan (1976: 88) claim that ellipsis and substitution are two distinct expressions of the same kind of coherent relation. So, the definition of ellipsis is “the omission of the item without being replaced or replaced by nothing” while substitution is “the replacement of one item by another”. Additionally, substitution is defined as “replacing content-carrying elements with short replacement or no independent content” (Beau Grande and Dressler 1980: 49). That means, when these placeholders, also known as dummy words, are employed they either reduce the usage of the same antecedent term or serve as fuller versions that appear elsewhere in the context. As a result, the reader or listener can complete the appropriate section based on the text’s previous section (Renekma, 1993:37). Furthermore, substitution, according to Crystal (1997:371), is a “term used in linguistics to refer to the process of result of replacing one item by another at a particular place in the structure”. To clarify this, substitution is the process of changing word or phrase to something other like ‘one, do or so’ (Halliday & Hassan, 1976:89). For example:

1. I prefer the red shirt, but she chose the blue one.

In anaphoric sense, the word ‘one’ replaces ‘shirt’ (ibid.)

### 2.4.4. Ellipsis

Ellipsis can be defined as an implicit anaphoric device in which items that can be recovered from the previous context are deleted (Halliday and Hassan, 1976: 142). In this respect, ellipsis is any construction in which certain information that is intended to be present and necessary for semantic interpretation is absent but can be obtained from linguistic context, particularly if the information can be located elsewhere in the phrase (Trask, 1993: 89). In light of this, the elliptical item is the one that allows a certain space to be filled from another location. That means, the same thing happens when certain words like ‘one’ and ‘do’ are substituted. However, ellipsis leaves the space unfilled and doesn’t add anything. The term “substitution by zero” refers to ellipsis for this reason (Halliday and Hassan, 1976: 143). For instance;

1. Joan brought some carnations, and Catherine some sweet peas (ibid.).

The second clause in the example above can be understood and viewed as “Catherine some sweet peas” since the verb in the second clause is omitted but can be determined by reading the preceding clause (ibid.).

### 2.5. Cataphoric Devices in English

In order to build tension or highlight the information that will be revealed later in a work, cataphoric devices are language strategies that refer to a person, object, things, or ideas (Halliday and Hassan, 1976: 148).

### 2.5.1. Cataphoric Personal Pronoun

Personal pronoun can act cataphorically when they precede their referents (Halliday and Hassan,1976: 49). for example:

1. When he arrived, John was tired.

The cataphoric pronoun ‘he’ refers to ‘John’. To clarify this, this form is commonly used to generate surprise or maintain sentence order (ibid.).

### 2.5.2. Demonstrative Cataphora

Information that is clarified later in the sentence or speech may be introduced by demonstrative like ‘this, these, etc.’. That means, demonstrative pronouns can also be used cataphorically, in such case, they work cohesively (Aziz, 1998:80). For example:

1. This is the man who told me the funny story (ibid.).

In light of this, although it is less common than anaphora, cataphora is a useful rhetorical strategy for holding reader’s attention and creating anticipation (Halliday and Hassan,1976: 46).

## 2.6. Definitions of Chat GPT and the importance of Using It.

Language is the most important instrument for human communication and collaboration in a complicated environment. That means, from the first grunts and gestures to revolutionary manifestos and tweet storms, language has allowed us to communicate, share ideas, and convey human emotion. But the technology that supports communication has changed along with our communication demands (Theobald, 2024: 1). In other words, our ability to communicate and come up with ideas is being revolutionized by new linguistic tools available today. These new tools, such as voice-enabled assistance and chat bots for customer support, are enabling machines to communicate with people using natural language (ibid.)

According to Li et al. as cited in Terrence J. Sejnwski (2023: 8), an advanced natural language processing (NLP) model called Chat GPT was created by open AI. It is a number of the family of large – scale deep learning models called Generative Pre- trained Transformers (GPTs), which are made for a variety of NLP tasks. It means that, with its ability to comprehend and produce human – like text responses in a variety of situations, Chat GPT is especially designed for conversational exchange. In this respect, Chat GPT uses its transformer design to effectively realize and comprehend textual inputs by utilizing self-attention techniques. As a result, because of its architecture, Chat GPT is able to recognize intricate linguistic patterns, semantic subtleties, and contextual relationships, which enable it to generate responses in natural language that are both logical and maintain (Sejnowski, 2023: 8)).

Additionally, Chat GPT’s capacity to produce text based on input is one of its distinctive features, which makes it appropriate for uses such chat bots, virtual assistants, and text – based conversational gents (Lalar et al., 2024). In other words, Chat GPT learns to produce human – like responses that reflect the tone and style of natural language conversations through intensive

pre – training on large text data collections (ibid.). Furthermore, Chat GPT is now consider of the art solution for a variety of NLP problems since these developments, which have resulted in notable gains in language interpretation, answer production, and overall performance (Kuhail et al., 2024).

According to the present study, Chat GPT can be defined as “an advanced conversational system developed by open AI that produces coherent and contextually appropriate text through the use of large-scale language modeling”. In other words, Chat GPT based on the GPT architecture produces language by forecasting word sequences according to statistical patterns collected from comprehensive training data (Brown et al., 2020:1877-1878). In this respect, because of this ability, it can imitate coherent speech including the usage of linguistics elements that are essential to referential cohesion(ibid.).

### **3. Methodology**

This study examines anaphoric and cataphoric references in Chat GPT conversations sing both qualitative and quantitative methods. It focuses on referential cohesion in conversation produced by AI, especially how cohesive devices support coherence, clarity, and continuity in user- Chat GPT interactions.

#### **3.1.Research Design**

The research uses a descriptive analytical design. It examines how anaphora and cataphora are used in particular Chat GPT talks. The analysis based on cohesion theory act as the basis for the analysis, particularly the model put forward by M.A.K. Halliday and Rugiya Hassan.

#### **3.2. Data Collection**

In order to maintain language diversity, the data consist of selected samples which include thirty conversations that were generated through interactions between different users with Chat GPT. That means, every chat exchange between the user and Chat GPT, offering authentic examples of referential cohesiveness digital language. These conversations were chosen from a variety of topics, including education, technology, daily communication, academic writing, and social interaction.

As a result, the conversations were gathered while users were interacting directly with Chat GPT. Examples of referential coherent devices, like as demonstratives, pronouns, and etc. are present in every speech.

#### **3.3.Data Analysis**

The study’s data analysis was carried out manually through linguistic analysis of the chosen Chat GPT exchanges. The procedure of analysis was divided into multiple phases. The researcher first carefully read the thirty exchanges several times. Second, every time anaphoric and cataphoric references appeared in the talks, they were manually recognized and highlighted. Third, the references that were found were categorized into their types. As a result, following categorization, the researcher evaluated each reference’s role in terms of conversational

coherence and textual cohesiveness. The use of pronouns and other referential terms to link various conversations between users and Chat GPT answers received special attention.

In order to identify the cohesive devices that were most frequently employed in the chosen talks, the researcher additionally manually determined the frequency of each form of reference. In this case, the results were presented in a straightforward and methodical manner using tables and statistical summaries.

### 4.3. Analysis of Results

Referential cohesiveness is an essential language element in Chat GPT conversations, as the results analysis shows. That means, maintaining coherence, continuity, and clarity in AI generated speech is greatly aided by the frequent use of anaphoric and cataphoric references. The results show that Chat GPT uses cohesive devices especially pronouns and demonstrative phrases, in way that are similar to human conversational patterns. According to the linguistic analysis of collected data, anaphoric referential relation were found in 60% (n = 18). Whereas, cataphora references were found in 40% (n =12) of the 30 samples that were analyzed. Most of the sample is comprised of these types, which offer important insights in how speakers use coherent devices in conversation. As illustrated in figure:

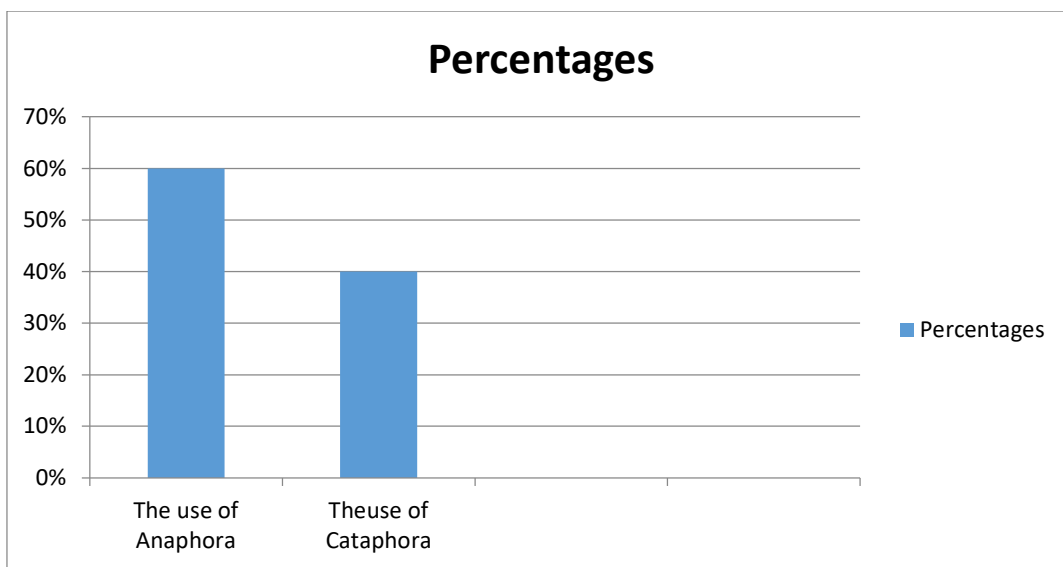
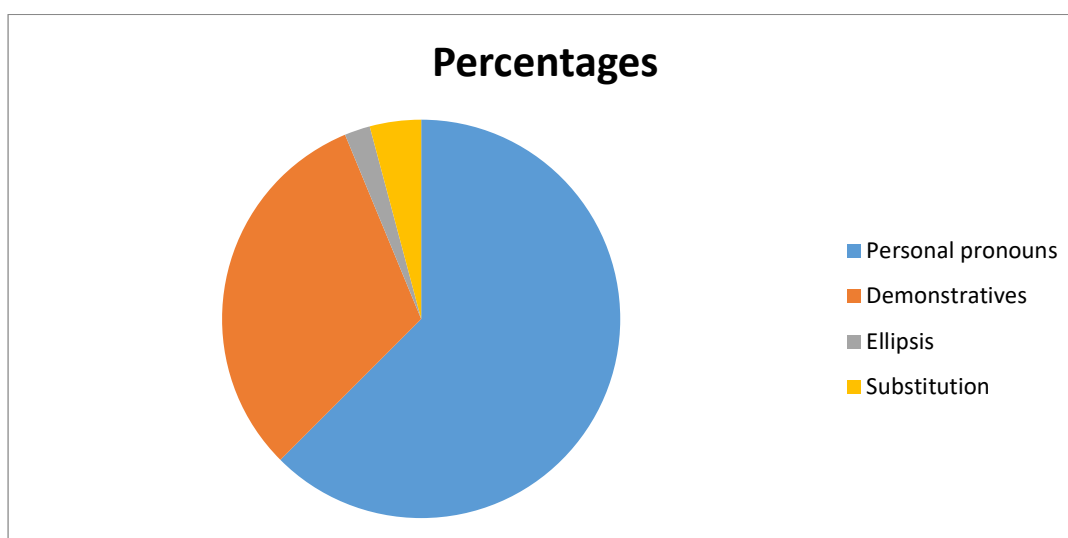


Figure 1: the percentages of using anaphora and cataphora

The large number of anaphoric references in the conversation under analysis is one of the most significant discoveries. This suggests that Chat GPT relies heavily on backward reference to connect current utterances to previously mentioned data. That means, in order to keep the language flowing smoothly and prevent needless repetition, personal pronouns like (it, they, he, and this) were employed frequently. As a result, this finding confirms the claim made by M.A.K. Halliday and Ruqaiya Hasan in coherence in English that a key element of textual coherence is reference.

In other hand, the analysis also shows that despite being less common, cataphoric references are crucial for introducing concepts and pointing readers in the direction of future material. To clarify this, forward references are sometimes used by Chat GPT to build suspense or better arrange explanations. This use shows how the AI system can organize conversation locally and keep readers interested.

Another significant finding is the frequency of demonstrative references like (this, that, and these) in academic conversations and explanatory response. In this respect, these devices served as crucial instrument or tying thoughts together and summarizing previously discussed ideas. The following figure explains which form is more frequently uses in Chat GPT conversations;



**Figure 2: Anaphora and Cataphora Devices**

In light of this, all of these results indicate that Chat GPT language model predicts contextually suitable references based on previous speech, which tends to provide grammatically consistent responses. In addition, AI system is able to maintain conversational continuity throughout several exchanges. This feature demonstrates AI generated language's sophisticated contextual processing abilities.

## 5. Conclusion

This study investigated referential cohesiveness in Cha GPT conversations with a special emphasis on the usage of anaphora and cataphora as important cohesive strategies. That means, the findings clearly show that anaphora reference is the most common type used by Chat GPT, particular the use of personal pronouns which effectively keep continuity, reduce repetition, and ensure conversational clarity. In other hand, cataphoric reference is un common and is typically connected with more elaborate, formal, or explanatory sentence constructions.

However, the investigation discovers that referential cohesiveness is crucial in determining the coherence and readability of AI – generated language. That is, cohesive devices

help logically organize conversation by linking ideas across sentences and conversational changes. In light of this, this study shows that Chat GPT substantially resembles human linguistics activity that are consistent with recognized analysis theories.

Additionally, the study carries important implications for both linguistic theory and practical applications. In this respect, it shows that conventional frameworks of cohesiveness may be used to study AI generated speech successfully and offers insight that could help with academic writing. That is, by comprehending how referential cohesiveness functions in Chat GPT output, users become more conscious of coherence in their own writing.

To sum up, referential cohesiveness is still essential to successful communication in both human and AI generated language. As a result, together, they provide a useful topic for further linguistic research and constitute a crucial component of coherent conversation.

Additionally, the analysis shows that referential cohesiveness significantly improves Chat GPT conversations' coherence. As a result, the study shows that anaphoric and cataphoric devices are crucial methods for structuring meaning in AI- mediated communication in addition to being linguistic structures.

## References

- Aziz, Y. Y. (1998). Topics in Translation with Special References to English and Arabic. Benghazi – Libya: University of Garyounis.
- Beaugrande, R., De. and Dressler, W. (1981). An Introduction to Text Linguistics. London: Longman.
- Berube, M. S., et al. (1996). Book of English Usage: A practical and Authoritative guide to Contemporary English. New York: Houghton Mifflin Company.
- Bosch, P. (1983). Agreement and Anaphora: A study of the Role of Pronouns in Syntax and Discourse. London; Academic Press, Inc.
- Brown, G. and Yule, G. (1983). Discourse Analysis. Cambridge: CambridgeUniversity Press.
- Crystal, D. (1997). A Dictionary of Linguistics and Phonetics. Oxford: OxfordUniversity Press.
- Halliday, M. A. K. (1985).An Introduction to Fundamental Grammar. London: Edward Arnold.
- Halliday, M. A. K. and Hasan, R. (1985). Language, Context and Text: A Social Semiotic Perspective. Oxford: DeakinUniversity Press.
- \_\_\_\_\_ . (1976). Cohesion in English. London: Longman.
- Hoey, M. (1991). Patterns of Lexis in Text. Oxford: OxfordUniversityPress.
- Hooper, V. F. et al. (2000). Essentials of English.New York: Barrons Educational Series, Inc.

- 
- Hudson, G. (2000). Essentials Introductory Linguistics. Cambridge, Massachusetts: Blackwell, Publishings, Ltd.
  - Hurford, J. R. and Heasley, M. B. (1983). Semantics: A Course Book. Cambridge: CambridgeUniversity Press.
  - Lyons, J. (1981). Language and Linguistics: An Introduction. Cambridge: CambridgeUniversity Press.
  - Quirk, R. et al. (1985). Comprehensive Grammar of the English Language. London: Longman.
  - Renekma. J. (1983). Comprehensive Grammar of the English Language. London: Longman.
  - Richards, J. C. et al. (1985). Longman Dictionary of Applied Linguistics.London: Longman.
  - Sejnowski, T. J. (2023). ChatGPT and the Future of AI: The Deep Language Revolution. MIT Press
  - Scarcella, R. C. (1984). Cohesion in the Writing development of Native and Non-Native English Speakers. Unpublished Ph.D. Dissertation. University of Southern California. (Abstract in Dissertation Abstracts International, Vol. 45, No. 5, 1984, p.1386).
  - Stageberg, N. C. (1971). An Introductory English Grammar. New York: Houghton Mifflin Company.
  - Sunday, B. L. R. (1983). Cohesion and Coherence in the Language Production of a Selected Group of Secondary Bilingual Students. Unpublished Ph.D. Dissertation. University of Illinois at UrbanaChampaign. (Abstract in Dissertation Abstracts International, Vol. 44, No. 10, 1984, p.3003).
  - Tehrani, N. J. and Yeganeh, A. S. (1999). A Dictionary of Discourse Analysis. Tehran: Rehnama.
  - Trask, N. J. (1993). A Dictionary of Grammatical Terms in Linguistics.London: Routledge.
  - Trujillo, F. (2012), "Discourse Analysis and Grammar". Retrieved in March, 11, 2012. [www.ugr.es](http://www.ugr.es)
  - Tom B. Brown, Mann, B., Ryder, N., Subbiah, M., Kaplan, J., Dhariwal, P., et al. (2020). Language Models are Few-Shot Learners. Advances in Neural Information Processing Systems (NeurIPS), 33, 1877-1901.
  - Widdowson, H. G. (1987). Teaching Language as Communication. Oxford: OxfordUniversity Press.
  - Yule, G. (2010). The Study of Language. 4th edition. Cambridge: CambridgeUniversity Press.
  - Yule, G. (1985). Pragmatics. Oxford: OxfordUniversity Press.