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## **Formal Semantics and Pragmatics: Understanding Context-Sensitivity in Linguistic Expressions among Iraqi MA Students**

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### **Abstract**

The semantics and pragmatics interaction refers to the connection between the literal and contextual meaning of language, with particular emphasis on sentence meaning (semantics) as it interacts with the speaker's intention and situational context (pragmatics). The interface between pragmatics and semantics has been the focus of the current paper, especially the nature of the context-sensitive expressions in natural language. The current research paper aims to investigate the constraints of formal semantics, which traditionally focus on such aspects as truth value and compositionality, to sufficiently reflect the dynamic and context-sensitive nature of linguistic expressions. To achieve this aim, a hypothesis is set to show whether or not having a good understanding of both formal semantics and pragmatics, students can be expected to be good in their interpretation of all forms of context-sensitive expressions, regardless of their complexity and context-dependence. The investigation was carried out with 15 MA students from different Iraqi universities, and they were supposed to possess a good knowledge of formal semantics, pragmatics, and linguistics. The primary data collection instrument for this study is a Google Form, which includes a test focused on five types of context-sensitive expressions, including indexicals, deictic expressions, epistemic modals, anaphora, and attitudinal expressions, by sending it via WhatsApp. The findings show that the students scored highest with indexical expressions (51.1%), which indicates that they feel comfortable with such expressions that have their meaning directly related to the immediate context, something that fits well within the clear-cut lines of formal semantics. Epistemic modals (46.7% used in more contextual interpretation) and attitudinal expressions (40% used in more contextual interpretation) showed lower success rates, demonstrating the difficulty of integrating formal semantic knowledge and using pragmatic relation. The most challenging ones were anaphora (33.3%) and deictic expressions (24%), as they are very context-dependent phenomena, including the discourse and situational awareness. These results demonstrate that while students had a strong foundation in formal semantics, the complexities of interpreting context-sensitive expressions highlight the difficulty of navigating the interface between formal semantics and pragmatics, where contextual factors and speaker intentions play a significant role. The study ends with some recommendations for further studies

**Keywords: Semantics and Pragmatics Interaction, Formal Semantics Boundary, Context-Sensitive Expressions**

## الدلاله الشكليه والتدليليه لفهم تأثير السياق في التعبيرات اللغوية التي يستعملها طلبة الماجستير العراقيين

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### المستخلص

يشير التفاعل الدلالي والتدليلية إلى العلاقة بين المعنى الحرفي والسياسي للغة، مع التركيز بشكل خاص على معنى الجملة (الدلالات) لأنها تتفاعل مع نية المتحدث والسياق الظري (التدليلية). كانت الواجهة بين التدليلية وعلم الدلاله هي محور البحث الحالى، وخاصة طبيعة التعبيرات الحساسة للسياق في اللغة الطبيعية. تهدف الورقة البحثية الحالية إلى دراسة القيود المفروضة على الدلالات الرسمية، التي تركز تقليدياً على جوانب مثل قيمة الحقيقة والتركيب، لتعكس بشكل كاف الطبيعة الديناميكية والحساسة للسياق للتعبيرات اللغوية. لتحقيق هذا الهدف، تم وضع فرضية لإظهار ما إذا كان وجود فهم جيد لكل من الدلالات الرسمية والتدليلية أم لا، يمكن أن يتوقع من الطلاب أن يكونوا جيدين في تفسيرهم لجميع أشكال التعبيرات الحساسة للسياق، بغض النظر عن تعقيدها واعتمادها على السياق. تم إجراء التحقيق مع ١٥ طالب ماجستير من جامعات عراقية مختلفة، وكان من المفترض أن يمتلكوا معرفة جيدة بالدلالات الرسمية والتدليلية واللغويات. الأداة الأساسية لجمع البيانات لهذه الدراسة هي نموذج Google، والذي يتضمن اختباراً يركز على خمسة أنواع من التعبيرات الحساسة للسياق، بما في ذلك التعبيرات الفهرسية، والتعبيرات الإدلالية، والنماذج المعرفية، والجنس، والتعبيرات المواقفية، عن طريق إرسالها عبر WhatsApp. تظهر النتائج أن الطلاب سجلوا أعلى الدرجات في التعبيرات الدليلية (٥١٪)، مما يشير إلى أنهم يشعرون بالارتياح مع مثل هذه التعبيرات التي يرتبط معناها ارتباطاً مباشراً بالسياق المباشر، وهو أمر يتناسب جيداً مع الخطوط الواضحة للدلالات الرسمية. أظهرت الوسائل المعرفية (٦٪) المستخدمة في المزيد من التفسير السيادي) والتعبيرات المواقفية (٤٪) المستخدمة في المزيد من التفسير السيادي) معدلات نجاح أقل، مما يدل على صعوبة دمج المعرفة الدلالية الرسمية واستخدام الاستدلال العملي. وكانت أكثرها تحدياً هي الجنس (٣٪) والتعبيرات الإيحائية (٤٪)، حيث إنها ظواهر تعتمد بشكل كبير على السياق، بما في ذلك الخطاب والوعي الظري وكانت أكثرها تحدياً هي الجنس (٣٪) والتعبيرات الإيحائية (٤٪)، حيث إنها ظواهر تعتمد بشكل كبير على السياق، بما في ذلك الخطاب والوعي الظري. توضح هذه النتائج أنه على الرغم من أن الطلاب لديهم أساس قوي في الدلالات الرسمية، فإن تعقيبات تفسير التعبيرات الحساسة للسياق تسلط الضوء على صعوبة التنقل بين الدلالات الرسمية والتدليلية، حيث تلعب العوامل السياسية ونوايا المتحدث دوراً مهماً. وتنهي الدراسة ببعض التوصيات لمزيد من الدراسات.

**كلمات مفتاحية:** التفاعل بين الدلالات والتدليلية، حدود الدلالات الرسمية، التعبيرات الحساسة للسياق

## 1. Introduction

The semantics-pragmatics interface has been a major focus of linguistics since it explores the problems of meaning in natural language. Whereas semantics is usually concerned with the literal or truth-conditional meaning of the sentences, that is, how the combination of words and their syntactic constructions adds to the meaning, pragmatics is concerned with the meaning in context. The meaning we get out of the language in our daily communication is not always enclosed in the structure of the sentence alone, but rather in the context of pronunciation. Such a difference, though, is unclear when we consider the case of context-sensitive expressions, words and phrases the meaning of which depends extensively on the identity of the speaker, the time at which it is uttered and the context of the conversation.

Context-sensitive expressions, such as indexicals (e.g., I, here, now) or epistemic modals (e.g., might, must), are difficult to fit into the strict structures that formal semantics offers. The interpretation of these expressions is context-dependent, and this makes it difficult to apply truth-conditional models, which have been central to formal semantics. An example is that the pronoun I is the speaker of the utterance, whereas here is the place of the speaker. Likewise, epistemic modals, like, might or must, reveal doubt or necessity but rely on the knowledge of the speaker and the context to convey an exact meaning. These phrases highlight the inadequacy of formal semantics to define the fluidity in meaning of dynamic real-world communication (Kaplan, 1989; Horn, 2003).

This paper explains how context-sensitive expressions put a strain on the limits between formal semantics and pragmatics. It starts with an example that demonstrates the theoretical principles of formal semantics that conventionally focus on compositional and truth-conditional meaning. Next, the paper explains how the use of context-sensitive terms in formal models makes it difficult to give these words a fixed meaning because they are flexible terms which cannot be understood completely out of context. It is through navigating this dilemma between these two

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realms of language theory that this paper attempts to demonstrate the challenges of making guesses about the meaning in natural language and the continual attempt to balance the static and dynamic features of interpretation. Also, by identifying these problems, this paper helps in better understanding the semantics/pragmatics interface, especially when it comes to ambiguity and flexibility created by context-sensitive expressions. It is supposed that MA students have sufficient knowledge, which reflects their ability in determining the meaning of context-sensitive expressions appropriately that's why a hypothesis which states that "Students with a good foundation in both formal semantics and pragmatics will consistently excel in interpreting all types of context-sensitive expressions, regardless of their complexity or reliance on contextual understanding", is set to be verified.

## 2. Theoretical Background

Semantics and pragmatics are two different but closely related fields of linguistics which are also interested in the meaning of words, but in different ways. Semantics studies the meaning of words, phrases and sentences alone and may look into the truth conditions and composition of such, and pragmatics considers the contextual, speaker intentions, and social influence on meaning. The edge border between the two disciplines is still debated over, particularly in the context of context-sensitive expressions, which do not fit easily in either category. This intersection is important in understanding how to come up with more inclusive theories of meaning that are capable of explaining the fixed and dynamic nature of language interpretation.

### 2.1. The Interaction of Semantics and Pragmatics

This interaction of semantics and pragmatics has been a core area of linguistic theory, and deals with the connection of meaning as it is expressed through language. Semantics is concerned with the intrinsic meaning of words, phrases, and sentences, which normally looks at their truth conditions, compositionality and fixed meanings, separately. The pragmatics, in its turn, is a fairly autonomous field of study which appeared in the early 1970s and almost immediately started gaining the

interest of scholars since it considers the role of meaning produced by the context of language usage, such as the intentions of the speaker, social norms, and the situation (Al-Hilu, 2017). The two disciplines overlap in explaining context-sensitive utterances, including indexicals, deictics and modals, whose interpretation requires a strong reliance on the context of utterance to make sense. The issue is to comprehend how these expressions that need a formal semantic framework and pragmatic meaning cross the borderline between the literal meaning and the context-based meaning (Allwood, 2017).

The interaction between the two disciplines is anchored on the difference between literal meaning (semantics) and contextual meaning (pragmatics). Semantics deals with the isolated meaning of language, and it deals with the truth conditions and compositionality of sentences.

The major focus of this approach is how the meanings of individual words and phrases will work together to create the meaning of bigger linguistic structures. Conversely, pragmatics is a core area of linguistics which is committed to describing how variables of context may modify meaning. It is also concerned with the change of meaning depending on the situation where language is applied, such as the intentions of the speaker, the social situation and the meaning of the listener (Hachim & Al-Hilu, 2025). The literal meaning of a sentence, which is ascertained through the semantic tools, may not fully portray the intended meaning of the sentence, which, in most cases, may be incomplete and therefore involve the insights of pragmatics. An example of this is a sentence such as "Can you pass the salt?". The meaning of the word pass (which is literal) is connected to the syntax, but (pragmatically) the word pass suggests an entreaty to do something, depending on the situation of the conversation (Grice, 1975; Searle, 1969).

Sentence meaning (semantics) and the meaning of the speaker (pragmatics) an important points of interest when the semantics-pragmatics interaction is studied. Sentence meaning is the meaning that may be influenced by the construction of a sentence by itself, without referring to the intentions of the speaker. Speaker meaning, on the other

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hand, integrates the communicative intents of the speaker and the context in which a given utterance is made. The interpretation of a sentence usually relies on the interpretation of the intentions of the speaker by the listener, which is one of the primary issues of pragmatics (Depraetere, 2019). The relationship between the two kinds of meaning is discussed in such models as neo-Gricean pragmatics, which points to the fact that both the literal meaning of the sentence and contextual clues help the listener to obtain the intention of the speaker. This dialogue brings out the extent to which a good part of human dialogue entails not only being aware of the structure of the sentence, but also being attentive to the social and cognitive contextual factors under which the sentence is uttered (Levinson, 2000).

A major problem of interpreting the interface between semantics and pragmatics is that it is difficult to clearly define what is deemed to be semantic and what is deemed to be pragmatic. In most instances, there is a thin line between the two, and whether a certain element of meaning is obtained through the formal semantics of a sentence or the pragmatic context is an issue that is still under discussion. As an illustration, the use of indexicals such as I or here appears to have a determined semantic value as well as a context-dependent meaning, which is manifested depending on the identity of the speaker and their whereabouts. Additionally, Also, context can be important in determining the meaning and may modify interpretations which cannot be explained by the formal semantics only. This contextual force makes the distinction between semantics and pragmatics rather difficult because the definition of meaning is commonly fluid and is subject to negotiation between the speaker and the listener. The complexity of this interface demands further unified models that would be able to capture the dynamism of the sentence structure and social context (Levinson, 2000; Sperber & Wilson, 1995).

## 2.2. Challenges from Context-Sensitive Expressions

Context-sensitive expressions form part of natural language because such expressions are reliant on the context in which they occur to find

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their meaning. These are indexicals, deictic expressions, epistemic modals, anaphora and attitudinal expressions which present serious challenges to formal semantics. Although the formal semantics is often aimed at giving some fixed meaning based on syntactic and logical rules, the context-sensitive expressions cannot be easily given such an approach. Rather, their interpretation depends on a series of factors, including the speaker, the time of uttering, the place, and mutual knowledge between interlocutors. This passage discusses the forms of context-sensitive expressions, problems associated with them in formal semantics and how pragmatic revisions can help solve interpretive ambiguities (Roberts, 2014).

Context-sensitive expressions refer to expressions whose meanings cannot be entirely established without looking at the context under which they are applied. *Indexicals* are one of the main types of context-sensitive words, which are such words (such as I, you, here, and now). The expressions depend on the context of the utterance, that is, on the speaker, the place, and the time, to define their meaning. As an illustration, the term I is the speaker at the time of speaking and therefore, it is very much dependent on the identity of the speaker. Equally, such phrases as here and now indicate the place and time of the speaker, respectively. These indexicals vary in meaning depending on the context, and it is hard to describe them by simple truth-conditional semantics (Kaplan, 1989; Roberts, 2014).

Along with indexical expressions, there is also another group of context-sensitive terms, which are *deictic expressions*. They contain such references as time, place and people like "tomorrow, there and that". What is meant by "tomorrow" will also depend on the time at which the utterance is made, and what is meant by there will depend on the location of the speaker. In addition, pronouns (such as he, she and it) and demonstratives (such as this and that) depend greatly on the context of the discussion to identify their referents. An example of this is that the term she might mean various other people based on what has been said before, whereas this book will be a particular book based on the context of the situation. These terms present problems to the formal semantics as

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their reference is not necessarily given, and must be solved concerning some contextual knowledge (Horn, 2003).

*Epistemic modals* (such as might, must, could) are used to state the level of certainty, possibility, or necessity of the speaker towards a given proposition. The contextual use of these modals has an effect on the way they are interpreted. As an illustration, the interpretation of the phrase she might come may be different based on the knowledge of the speaker, the prevailing circumstances of the situation and the context of the discussion. These modals point to the fact that context-sensitive expressions belong to the beliefs or knowledge of the speaker of the world and are difficult to interpret using formal semantic models, which fail to consider such subjectivity (von Fintel & Heim, 2011).

Furthermore, *anaphora* is a word that requires the usage of a previously described or connoted object in discourse to obtain comprehension. These anaphoric expressions are usually based on the previously used pronouns, which can be (he, she, and it), and the reference of these terms is made under the influence of the previous discourse. As an example, in the sentence, "John went to the store. He purchased milk", the pronoun he, which is the subject of the action, is used to reference the subject of the action, John. Anaphoric expressions are contextual in the sense that they require the interpretation of the preceding discourse, that is, the antecedent that the speaker or writer wants to refer to. In the absence of this context, the reference of the pronoun would be unclear or indeterminate. Anaphoric pronouns depend on the context of the conversation and the correlation of the sentence with the discourse (Davidson, 1967). Therefore, though statements such as he or she have intrinsic meanings, the real objects of the words may only be adequately interpreted in the context of the discussion, which makes them extremely responsive to discourse development as well as the mutual understanding between the speaker and the listener.

*Attitudinal expressions* are the ones that use terms (such as fortunately, unfortunately or surprisingly), indicating that the speaker of such words is making an evaluation or emotional judgment about an

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event or circumstance. Although such words may appear to be rather neutral in their form, they can be used to make the listener change their interpretation of what is being described (depending on the tone, beliefs or intentions of the speaker). An illustration of this is when the speaker talks of something that occurred happily; in this case, he or she uses a word such as happily, and the opposite, unhappily. In this case, the speaker uses the word, unfortunately. These statements have little meaning without the pragmatic context in which the speaker is and what the listener expects (Sperber & Wilson, 1995). Meaning of both the slurs as well as the attitudinal expressions may vary with the person who is talking, the one who is listening and the social dynamics among the parties involved in the conversation.

The major difficulty that arises with context-sensitive expressions is that they do not behave following the first goal of formal semantics, which is the truth-conditional one. The semantics of truth-conditional nature, which is mainly involved with identifying whether a sentence is true or not, is based on the assumption that the meaning of a sentence can be expressed as a set of fixed conditions. However, context-sensitive expressions cannot be treated in this way since the meaning of these expressions is not entirely dependent on the syntactic structure of a sentence or the constituent elements of a sentence. Rather, they need outside influences, namely, the identity of the speaker, the time of saying, and the knowledge that is shared by the speaker and the hearer to determine their meanings (Stanley, 2000). As an instance, the statement she is here needs knowledge about who she is and the context of here, which may be different depending on who is saying it and where he or she is. In formal semantics, it is problematic to give such sentences a precise and context-independent meaning since their interpretation depends strongly on other things not mentioned in the sentences. The uncertainties posed by the interpretation of context-sensitive expressions pose a challenge to the traditional formal models, which cannot accommodate these context-sensitive and dynamic aspects. This is more so when the context-sensitive words are put together, as there are several layers of context that one has to put into consideration to fully understand the context of the sentence. For example, the sentence “She is

“here” requires knowledge of both the identity of “she” and the context of “here,” which can vary based on who is speaking and where they are located. In formal semantics, providing a precise, context-independent meaning for such sentences is problematic because their interpretation relies heavily on factors outside the sentence itself (Kaplan, 1989).

Dynamic semantics and other models depending on context have been invented to resolve these challenges. In contrast to the traditional truth-conditional approaches, dynamic semantics sees the meaning as the process that changes during a discourse. According to this system, the sentence meaning is not preset but rather a given function which alters the context as the dialogue continues. The method explains context-sensitive expressions with the help of modelling the updating of the context following each utterance. An example is that while uttering the sentence I am here, dynamic semantics can make it so that the reference of I can be changed according to the speaker and location, which has made the model more adaptable to exploit the context-dependent meaning (Kempson, 2001).

Other schools, like the truth conditional pragmatics, seek to combine the rigidity of formal semantics and the flexibility of pragmatics. These models suggest that the literal sense of a sentence can be obtained with the help of the truth-conditions, yet the context is important to narrow the interpretation. Context-sensitive expressions in these models, such as I or here are considered as variables that are subject to the outer context, and the model can take into consideration the flexibility of meaning. Nonetheless, there are still limitations to these models in the complete internationalisation of the complexities that context-sensitive expressions add, especially in the context of epistemic modals and deictic terms (Sperber & Wilson, 1995).

Besides the theoretical models, practical modifications also make a critical contribution to the solution of the ambiguities raised by the expressions that are context-sensitive. Pragmatics, which is the study of the role of context in determining the meaning, is important in the process of identifying the referents of pronouns, indexicals, and modals.

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For instance, when interpreting a sentence such as She might be at the party the listener will apply contextual information such as the knowledge of the speaker, the time of a conversation, and the circumstance and use modal might to understand the modal might as expressing uncertainty. Likewise, listeners use the discourse around the utterance of pronouns such as he or she to understand the appropriate referent (Roberts, 2014).

Application of pragmatic considerations like shared knowledge, presupposition, and implicature is used to solve ambiguity associated with context-sensitive expressions. The common knowledge between the speaker and the listener will help the listener to guess what the speaker meant by one expression, and implicature helps in the interpretation of indirect meanings that must be guessed based on the context. As an illustration, when one tells someone that he is going to meet him at 5 PM tomorrow, the meaning that is intended by tomorrow is not only informed by the sentence structure, but also by the understanding that is mutually held that tomorrow is the day after the current one. Pragmatics, therefore, serves as a supplement to formal semantics in explaining variability and flexibility of meaning in communication in the real world (Grice, 1975).

To sum up, the use of context-sensitive expressions poses a serious problem to formal semantics since their meanings are subject to external conditions, including the identity of the speaker, time, location and mutual knowledge. Such expressions, be they indexicals, pronouns, demonstratives, or epistemic modals, are hardly susceptible to truth-conditional interpretations that are static. Consequently, there are dynamic interpretation models and context-specific frameworks that have developed to explain the dynamic meaning.

### 3. Methodology

In this section, the methodology of the study, centred on the Context-Sensitive Expressions and the way the meaning is perceived, is explained. The research will focus on the ways in which MA students at different levels perceive these expressions in different situations. A

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Google Form will be used in the collection of the data, and the analysis will examine how the context is utilised in decoding these expressions. The techniques of the current research are the so-called quantitative and qualitative ones, which are based on the analysis of the responses of the participants to the context-sensitive expressions in numerical terms. By this means, the research study will be able to quantify the number of times the correct and incorrect interpretations occurred, giving statistical information on how context affects the meaning interpretation among the respondents. Moreover, quantitative and qualitative data.

### **3.1.The Participants**

The investigation was carried out with 15 MA students in different Iraqi universities, and they were supposed to possess a good knowledge of formal semantics, pragmatics, and linguistics. This is a background that qualifies them well to interpret and analyse context-sensitive expressions. The participants were chosen particularly from those enrolled in an MA program in the areas of linguistics, semantics, pragmatics, or a related field, and they will also have to already understand the fundamental concepts of linguistics, such as semantics, pragmatics, and context-sensitive expressions. The participants were recruited via an invitation sent out via email, and participation is voluntary. All the chosen respondents will have access to the Google Form with the test.

### **3.2.The Instrument**

The primary data collection instrument for this study is a Google Form, which includes a test focused on five types of context-sensitive expressions. Each expression is used in a sentence, and the expression is presented in three distinct contexts, allowing participants to interpret how the meaning of each expression varies based on the situational context. The five expression types are: indexicals, deictic expressions, epistemic modals, attitudinal expressions, and anaphora. Participants will be asked to select the interpretation they believe is most appropriate for each context, with additional open-ended sections provided for them to explain their reasoning. Additionally, an open-ended question will allow

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participants to explain their reasoning, offering insight into their thought processes and how they arrived at their interpretation. Before the main test, participants will receive a brief instructional session to ensure they understand the structure of the test and the process of interpreting context-sensitive expressions effectively.

### 3.3.The Data Collection Procedure

After designing the test, the Google form will be shared through a link<sup>i</sup> to the 30 MA students by texting it using the WhatsApp application. The test will be done independently, and the students will have to interpret the expressions given in three contexts. This will be put in the form of multiple-choice questions the respondents will be asked to give the meaning of the expression that fits the context. Also, an open-ended question enables the respondents to provide a rationale for their reasoning, which will provide insight into their thinking patterns and their way of getting to their interpretation. Such a two-sided method of multiple-choice and open-ended questions will allow gathering both quantitative and qualitative data.

### 3.4.Results and Discussion

Both quantitative and qualitative methods are used to analyse the collected data. The initial one is the analysis of the multiple-choice answers, which will help to determine the extent how which the participants interpreted the context-sensitive expressions in the various contexts. The results are presented in the form of charts that present the statistics as percentages of respondents presented in front of each context. Frequency analysis will also be used to establish the frequency at which particular interpretations were chosen in each context-sensitive expression. Besides the quantitative analysis, the open-ended responses will be conducted through qualitative analysis. These answers will be coded using themes in order to determine the patterns of justifications by participants in their interpretations. The types of justification may include referring to contextual indications, cultural background, or individual experience. The idea is to know the logic behind every interpretation and to observe whether the students use linguistic cues,

external information, or personal aspects more. The classification of the justifications will allow the study to comprehend the cognitive mechanisms of interpreting context-sensitive expressions in a better way.

<sup>1</sup> <https://forms.gle/Xh2dS7AgDLiWzHfd8>

### 3.5. Results and Discussion

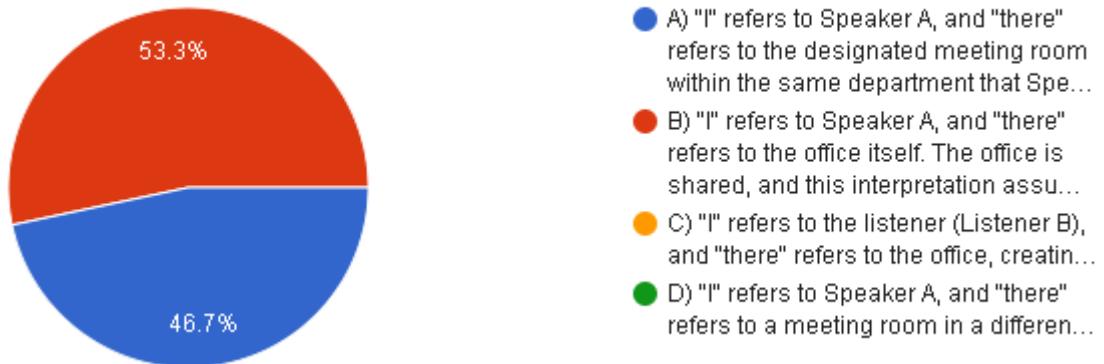
This part presents the results of the participants' responses to the expressions that are context-sensitive. The results of correct answers to each context are summarized in a table, then each context is shown in the form of graphs, which are set while the participants send their responses showing the percentages of each option in each context. Then the correct choice is clarified, and the correct and incorrect responses of participants on various contexts are discussed. These visualisations give a good overview of how the participants understood the expressions in different contexts. Also, the perfect and weak answers' extracts of the open-ended question are covered to provide more understanding of the rationale behind these interpretations. Analysis identifies the role of the context, cultural backgrounds, experience, and language in helping participants to interpret the expressions. The interpretations of these findings are positioned with reference to the semantics-pragmatics interface, where context is very important in meaning construction and refutes the boundaries between formal semantics and pragmatics. The discussion also includes a reflection of how these insights can be displayed in comparison with the available literature and what the implications of them are in terms of linguistic theory and the application of natural language processing. The results of correct responses are summarised in the table below:

**Table (1): The Results of Correct Responses for All Contexts of Context-Sensitive Expressions**

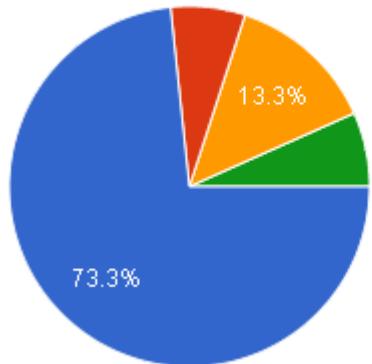
Types of Context-Sensitive Expressions	Context (1)	Context (2)	Context (3)	Total %

Indexicals	46.7%	73.3%	33.3%	51.1%
Deictic Expressions	6.7%	26.7%	40%	24.4%
Epistemic Modals	46.7%	46.7%	46.7%	46.7%
Anaphora	53.3%	13.3%	33.3%	33.3%
Attitudinal Expressions	13.3%	60%	46.7%	40%

The results presented in the above table identify the problems that students encounter at formal semantics and pragmatics in understanding context-sensitive expressions. Students scored highest with indexical expressions (51.1%), which indicates that they feel comfortable with such expressions that have their meaning directly related to the immediate context, something that fits well within the clear-cut lines of formal semantics. Epistemic modals (46.7% used in more contextual interpretation) and attitudinal expressions (40% used in more contextual interpretation) showed lower success rates, demonstrating the difficulty of integrating formal semantic knowledge and using pragmatic inference. The most challenging ones were anaphora (33.3%) and deictic expressions (24%), as they are very context-dependent phenomena, including the discourse and situational awareness. These results demonstrate that while students had a strong foundation in formal semantics, the complexities of interpreting context-sensitive expressions highlight the difficulty of navigating the interface between formal semantics and pragmatics, where contextual factors and speaker intentions play a significant role.

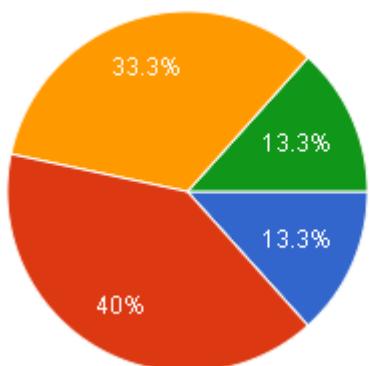
**Figure (1): Indexicals (context 1)**

Concerning the sentence "*I will meet you there at 2 PM*", the appropriate clarification to the sentence in the particular context is A) I is Speaker A and there is the designated meeting room in the same department that Speaker A regularly uses. Speaker A and Listener B, in this case, have negotiated a meeting time of 2 PM without settling on a particular place. In the given office context and the fact that Speaker A probably knows specifically a meeting room in the office, there can only be one meaning of there that means that the speaker is referring to a meeting room within his/her department that he/she constantly meets in, although the specific room has not been established. The application of the word, there, connotes the fact that there is a place that is familiar to both parties in their area of workspace, although the specific room may not be agreed upon. Thus, the participant face difficulty in choosing the right answer since their correct answers get (46.7%).

**Figure (2): Indexicals (context 2)**

- A) "I" refers to Speaker A, and "there" refers to the city where the meeting will occur. The reference to "there" remains vague and will be decided upon arrival.
- B) "I" refers to Speaker A, and "there" refers to the train itself, implying that the meeting will occur during transit. The location is specific to the train's route.
- C) "I" refers to the listener (Listener C), and "there" refers to the city. This assumption is incorrect.
- D) "I" refers to Speaker A, but "there" refers to the listener's location in a different city.

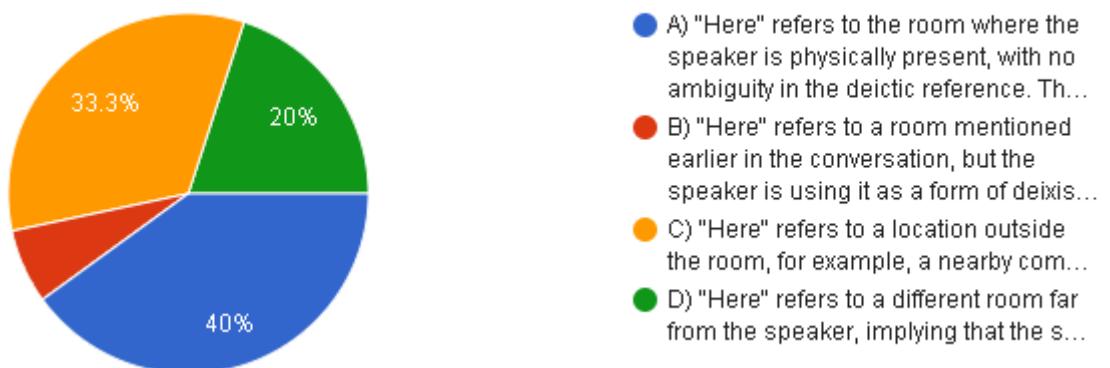
As with the second context, the correct answer (A) was selected by 73.3% of respondents, reflecting a strong understanding of the context. In this scenario, "there" refers to the city where the meeting will occur, but the exact location is vague and will be decided upon arrival. The high percentage of correct answers indicates that most participants correctly inferred the intended meaning, recognising the common use of "there" in such situations where details are still being worked out.

**Figure (3): Indexicals (context 3)**

- A) "I" refers to Speaker A, and "there" refers to a nearby café inside the station where Speaker A expects to meet the listener.
- B) "I" refers to Speaker A, and "there" refers to the platform area within the station where the speaker plans to meet the listener.
- C) "I" refers to Speaker A, and "there" refers to the general station building, including the platform and surrounding areas.
- D) "I" refers to Speaker A, and "there" refers to a location outside the station building.

According to the third context, the correct answer was (C) "I" refers to Speaker A, and "there" refers to the general station building, where the speaker assumes the meeting will take place in a public waiting area. The time "2 PM" is fixed, but the location remains uncertain, and was chosen by 33.3% of the respondents. This quite low percentage indicates that out of all participants, some of them understood that there was a reference to the general station building, but many of them did not comprehend the ambiguity and believed that it was a more specific place, like a cafe or platform. This confusion was enhanced by the fact that the station was very big and there was uncertainty about the point where the meeting would be held. Since the phrase might be used to mean any of the many places in the station, the respondents were probably inclined to think of more tangible meanings, hence the low percentage of correct responses. This is indicative of the difficulty of realising the faint allusions in real-life and complicated settings, such as a busy train station.

**Figure (4): Deictic Expressions (context 1)**



Concerning the second type of context-sensitive expressions (i.e., Deictic Expressions), answer B) is right, showing that here is a room mentioned in the previous part of the conversation, and the speaker uses

it as a deixis; she assumes that the listener knows which room he is referring to based on the previous conversation. Here, the words "He is here right now" are uttered in a particular room, and even though the speaker and the listener are in the same physical location, the tone of the speaker makes the listener believe that here is serving in a more abstract way, which uses the knowledge shared by both parties or what has been previously said. This means that the listener would know which room is being mentioned without having to mention that room. Nevertheless, the low score in the correct answers, 6.7% only shows that the interpretation of the usage of deixis in this situation was also a challenge to many respondents. This is possibly because of the slightness of the referencing; the listener may not have easily been able to discern which room was being referred to, previously, in the preceding discussion or may have misconstrued the situational sensitivity of the pronoun here. The poor score indicates that the participants had difficulty in determining the deixis functioning in daily communication, particularly when the reference is indirect and depends on the pre-existing shared context.

**Figure (5): Deictic Expressions (context 2)**



In the second context, the correct answer (C) indicates that "here" refers to an abstract or figurative location, rather than a physical place, in

the context of a phone call where the speaker and listener are in different cities. Since there is no shared physical space between the two participants, "here" likely represents the virtual space created by the phone call itself, referring to the immediate presence in the conversation. This interpretation aligns with how "here" can be used in phone conversations to denote the shared, virtual space of communication rather than a concrete physical location. The relatively low percentage of correct answers, 26.7% suggests that many participants struggled to interpret "here" in this abstract sense. They may have been more focused on physical locations, assuming "here" referred to a place tied to one of the participants' actual locations, or they might not have fully grasped how figurative language works in virtual settings. The ambiguity of the term in this context likely led to confusion and contributed to the lower correct answer rate.

**Figure (6): Deictic Expressions (context 3)**



Regarding the third context, the right option, which is (A), implies that here is where the speaker is right before the camera, and clearly points out the presenter as visible in the video call frame. During a video conference, the participants will notice one another on the video feed; thus, here refers to the physical location of the person who is speaking in

the virtual world of the video conference. This interpretation relates the deictic term here with the position of the speaker before the camera, which is seen by all the participants. The 40% right answers indicate that lots of participants were able to recognise the application of the here word as the presence of the speaker in the video conference. Nevertheless, the relatively small percentage indicates that some participants might have been confused due to the virtual character of the environment and might have understood here as the space of some other nature, such as a virtual meeting room, but not the direct physical appearance of the speaker on the camera. This moderate percentage of correct responses could have been caused by the subjectivity of deictic statements when applied to a virtual environment.

**Figure (7): Epistemic Modals (context 1)**



The third type of context-sensitive expression is explained by saying the sentence "She must be at the office" in three different contexts, the right choice, that of (A), signifies that "must" is the belief of the speaker using indirect evidence, e.g., the office is open, and so it is a conclusion made by circumstantial facts. Here, the speaker is inferring that the individual is probably at the office, although he/she does not know when

that individual is exactly on his way. The open office is indirect evidence, and the speaker assumes that the individual has to be present. This method is deductive in nature since it is based on the available information and not full confidence. The reason behind the correct answer rate of 46.7% indicates that close to half of the participants got this reasoning with the correct identification of the circumstantial basis of the opinion of the speaker. Nevertheless, a moderate percentage shows that there is a degree of confusion where the participants could have misunderstood the must as stating a certainty, or they could have thought that the speaker was making a conclusive statement without taking into consideration the part of the indirect evidence. This shows just how hard it is to see that what is being inferred is two feet short of being unconditionally certain.

**Figure (8): Epistemic Modals (context 2)**



The right response in this context, which is answer (A), points out that must is an expression of certainty that is founded on first-hand evidence; in this situation, the speaker personally saw the car of the person in the parking lot. Such direct observation is a good indication that the individual has a high probability of being in office. The must here is used with a feeling of certainty, meaning that the presence of the car is enough indication that the person has arrived. The fact that the correct rate was only 46.7% indicates that almost half of the respondents were able to make out the logical conclusion based on facts that could be

observed. The moderate percentage, however, means that some respondents could have misunderstood must to be a statement of possibility, or doubt, and not a conclusion reached as a result of direct evidence, which leaves some confusion about the level of certainty that must represents.

**Figure (9): Epistemic Modals (context 3)**



The right answer, which is (B), is that it must be a logical conclusion relying on the set date of appointment with the speaker, coming up with an inference that the individual must be at the office since he or she is set to be in the office. Though it has not been confirmed with any direct statement about the arrival of the person, the appointed meeting is some form of indirect evidence, and the speaker should logically conclude that the individual was expected at the office. This argument is suggested through the use of must because it is based on the planned setup rather than on the actual observation. This has been shown by the 46.7% correct answer rate, which implies that nearly half of the respondents were able to identify that the speaker was inferring the probable presence of the person based on the scheduled appointment. But the moderate percentage introduces some confusion as well because the respondents

could have understood must as the sign of certainty or direct knowledge, but not as an inference made out of the indirect evidence.

In the context of Epistemic Modals, the correct answers in the three scenarios were chosen by 46.7% of the respondents. This suggests that almost half of the participants were able to correctly interpret the use of epistemic modals, like "must," which express the speaker's belief or inference based on available evidence, either direct or indirect. The term "must" in the contexts under analysis had some degree of certainty or inference. An example would be indirect evidence when the office was open, stated by it and a direct one when a car was observed in the parking lot or logical deduction by schedule. The fact that 46.7% of the respondents answered correctly is an indication that a significant number of them understood the complexities of epistemic modality. But the richness of context-dependent expressions entailed a certain amount of trouble in distinguishing between certainty and possibility, and inference. So, in spite of the fact that the underlying concept of the epistemic modals was essentially comprehended, participants still had difficulties viewing how these modals interacted with contextual facts in every case.

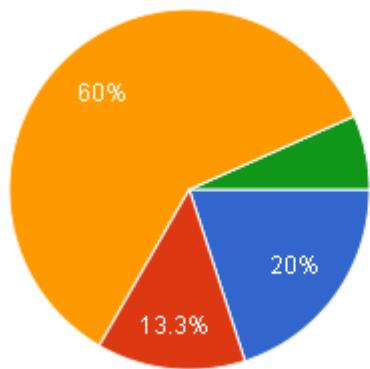
**Figure (10): Anaphora (context 1)**



The correct answer is (B). Here, "He" bought some milk refers to John, who was mentioned in the previous sentence. John went to the

store. Since the listener already knows about John, there is no need to formally reintroduce John as the listener can effortlessly notice that He refers to John. The discussion about the routine of John makes it obvious that the use of the pronoun is addressed to him. That (53.3%) of the people selected the correct answer implies that the vast majority of respondents comprehended this reference, as to how the previous mention creates a continuity in the discussion.

**Figure (11): Anaphora (context2)**

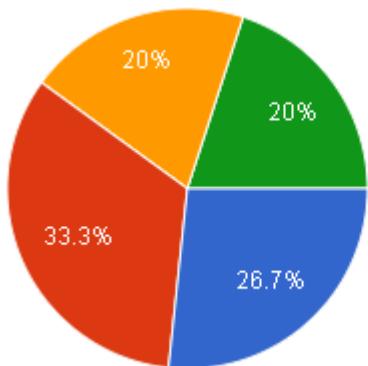


- A) "He" refers to the speaker, creating confusion in the reference, especially when the sentence lacks direct self-...
- B) "He" refers to an inferred person, based on the broader context of the conversation or shared knowledge, b...
- C) "He" refers to a person previously mentioned in a different conversation...
- D) "He" refers to the listener, creating a reverse of expectations where the pro...

The correct answer is (B). In this case, the speaker will say, "John went to the store"; however, he/she does not provide any previous context or reintroduce John at the beginning of the conversation. Consequently, the listener is forced to guess who he is talking about when the speaker says, He bought some milk. Although the first sentence mentions John, he does not actually come back to the discussion; thus, the listener must relate the pronoun He to John depending on the overall flow and structure of the conversation. Since we are depending on inference, the pronoun He is interpreted based on our mutual knowledge regarding the way conversations usually proceed. The percentage of giving the right response was only (13.3%) which means that the majority of respondents failed to give the inferred reference. Most of

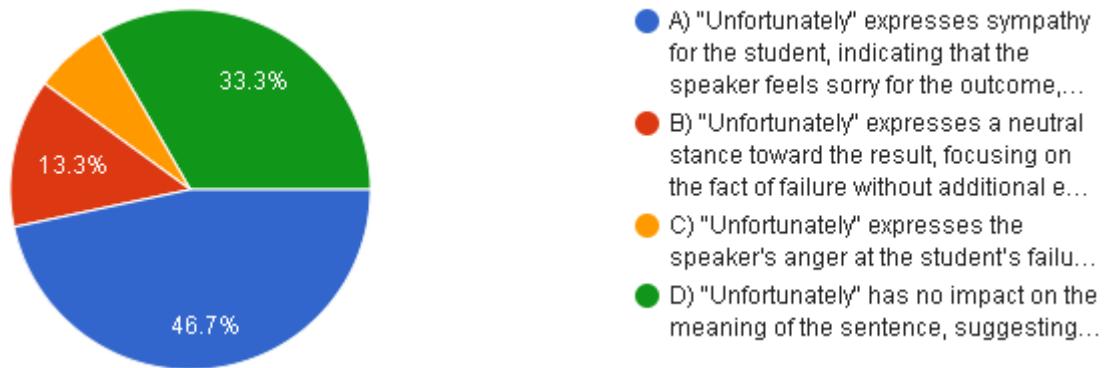
them probably misunderstood him as the other character or did not relate the two sentences.

**Figure (12): Anaphora (context 3)**

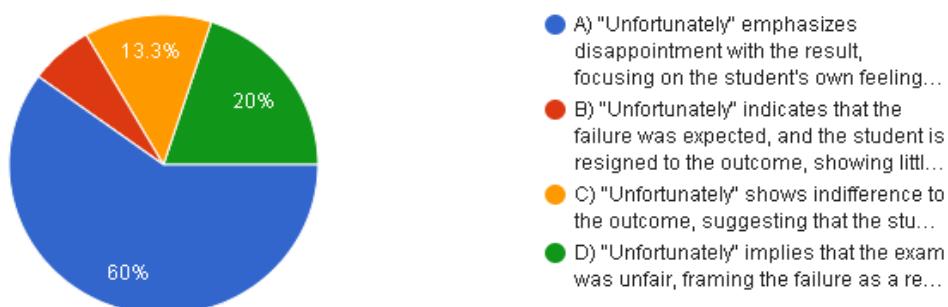


- A) "He" refers to a generic male figure, implying that "He" could be any male individual, but John is the most likely...
- B) "He" refers to John, based on prior discourse, resolving the anaphoric reference in a straightforward manner.
- C) "He" refers to a completely new individual introduced in the conversat...
- D) "He" refers to the first-person plural (e.g., "we"), introducing a broader coll...

In this case, the pronoun "He" refers to John, who was introduced earlier in the conversation. Since John was spoken of earlier before this sentence, the listener can readily conclude that he is referring to him as He. The reference is straightforward as it is based on the mention of John that has been made before, and it becomes very easy for the listener to understand the relationship. Although there are other males or maybe slight contextual variations, the mention of John is still apparent. The fact that (33.3%) of respondents picked the right answer (B) is that one out of three respondents comprehended the role of anaphora in this context, where He or she is the natural extension of John, combining with what they had been discussing. This illustrates the knowledge of the role of the use of pronouns in ensuring continuity in the conversation.

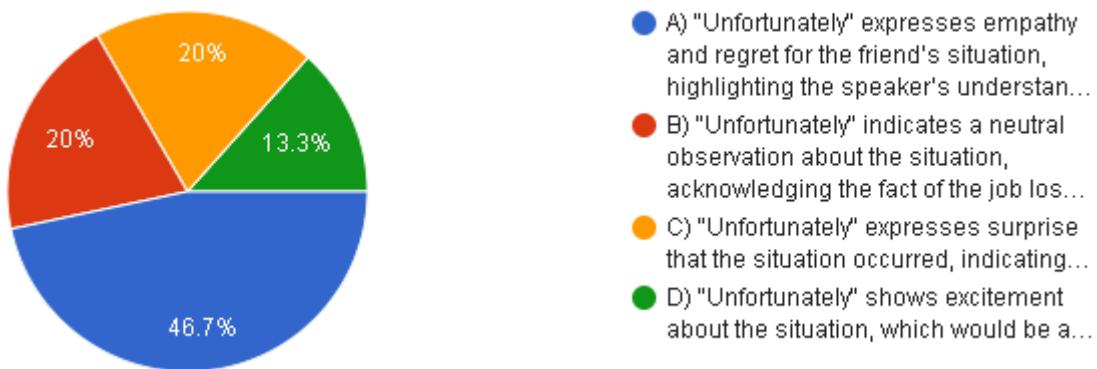
**Figure (13): Attitudinal Expressions(context 1)**

The correct answer is (B). Here, when the teacher says the word "unfortunately", it is in a tone of recognition of failure on the side of the student; however, it is neutral and well-balanced. In the case of the teacher, there is no emotional engagement or empathy, and he merely explains that the situation is negative. "Unfortunately" is used to accentuate the bad; however, it is not emotional or judgmental. It is an objective report on the achievements of the student. The rate of (13.3%) who chose the right answer demonstrates that a small part of people interpreted the word as neutral. This shows that the meaning of "unfortunately" could be construed by many others as a more emotionally involved meaning, like sympathy or frustration, as opposed to the more detached one that was desired.

**Figure (14): Attitudinal Expressions (context 2)**

The right choice is (A), where the disappointment of the outcome is known, with the student centring on how he or she felt about the loss. The student in this case has just been told of the failure in his grade, and he is very personal in saying that he has regretted a bit using the term "Unfortunately". The statement accentuates the emotional reaction of the student, which shows that he/she is dissatisfied with the result. Instead of just presenting a fact, a negative feeling of the student failing to pass the exam is expressed by the word "Unfortunately". The rate of (60%) of correct answers indicates that the majority of the respondents would have seen the emotional colouring behind the word as it being an expression of disappointment on the part of the student, as opposed to a detached or neutral comment.

**Figure (15): Attitudinal Expressions (context 3)**



Here, the tone of the colleague is sympathetic and regretful and empathy towards the friend who lost his/her job is expressed with the use of the word "unfortunately". It is not merely a simple factual statement but a personal reaction of the speaker to the situation, which is the recognition of the challenging situation that the friend is going through. The fact that there is the use of "unfortunately" shows that one cares, and it brings out the unfortunate aspect of the news, giving it an emotional touch instead of merely stating the facts. The percentage of those who

answered the correct choice (46.7%) shows that almost half of the respondents realised the empathetic tone of "Unfortunately" and accepted it as the expression of the speaker's concern towards the situation of his/her friend. Nevertheless, this reaction also indicates that there is the possibility that other people could have construed the statement more neutrally and overlooked the emotional aspect that the speaker conveyed.

Additionally, two main answers to the open-ended question are chosen to know how the participants select their answers. They are displayed as below:

*The perfect answer is: "I have given this meaning after analysing the situation keenly and taking into account the relationship between the speaker and the listener and how the meaning may alter under various circumstances. I also listened to contextual indicators like the environment, the preceding discussions and how some expressions were normally used. I also used my knowledge of language use in the like circumstances, such as cultural and linguistic conventions. These aspects made me understand the fact that context-sensitive expressions may possess different meanings in various circumstances, which is physical, social or conversational, and the more information is given, the more obvious the correct definition."*

The answer to the open-ended question will be a great guide on how the participants perceive the context-sensitive utterances and the intricacies in the formal semantics and pragmatics interaction. The response of the participant indicates that the interpretation process is not entirely founded on the formal semantics, but the interpretation extensively depends on the pragmatic factors that include the relationship between the speaker and the listener, the context that surrounds the situation, and cultural conventions. Through his analysis of the situation in a keen manner and taking into account its contextual clues, such as the setting and the discussions that have preceded the situation, the participant can realise that the meaning behind the use of context-sensitive expressions can change with varying physical, social,

or conversational elements. This shows the difficulty in interpreting such expressions as their meaning is often dynamic and depends on the situation, and needs not only knowledge of language, but also knowledge of the wider communicative context. The response is the interaction of the formal semantics and pragmatics, in which the more contextual information one has, the more the meaning is apparent. This is in line with the fact that semantics alone are not sufficient to explain the details of context-sensitive expressions, since they are dependent on contextual reputation and intentions of the speaker, which are part and parcel of pragmatic interpretation.

The weak answer is: *"I chose my interpretation because I think it just makes sense. I looked at the sentence and tried to figure out what it could mean, but I didn't really pay attention to anything specific in the context. I just thought about how I would usually understand the words, and that was my decision. I didn't think too much about how the situation might change the meaning, but I assumed it was just a regular expression."*

The weak answer indicates how the participant takes the context-sensitive expressions to get to the semantics, primarily the formal semantics, without completely entering into the formal semantics and pragmatics Interface. The fact that the participant has used a general and intuitive interpretation of the words in illustrating this indicates that it is a simplistic interpretation in which the meaning is understood at face value and does not consider the context of the entire information or the impact it may have on giving the interpretation. This method ignores the fact that pragmatics plays a crucial role in the interpretation of context-sensitive expressions, which in many cases cannot be explained only by the direct and traditional meaning of the words. The participant is deprived of the dynamism of meaning in actual communication by failing to follow the contextual details, like the relationship between the speaker and the listener or the contextual factors. Context-sensitive expressions can shift based on a number of things, such as physical, social, or conversational context; however, this view is rooted more in formal semantics, where meaning is frequently more fixed. This reply

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draws emphasis on the difficulty of filling in the gap between formal semantics and pragmatics because it shows that in understanding expressions properly, context plays a very important role, although the context is not always considered comprehensively without a more comprehensive contextual scrutiny.

According to our findings and interpretations discussed earlier, the study hypothesis, which states "Students with a strong foundation in both formal semantics and pragmatics will consistently excel in interpreting all types of context-sensitive expressions, regardless of their complexity or reliance on contextual understanding", cannot be fully verified. Although the students demonstrated a fairly good degree of success with indexical expressions (51.1%) and epistemic modals (46.7%), the success rate of the students with more context-dependent expressions, such as attitudinal expressions (40%), anaphora (33.3%), or deictic expressions (24.4%), was significantly lower. These findings show that the knowledge of formal semantics and pragmatics is not the only key to success in all kinds of context-sensitive phrases. The decreased response rates indicate that it is still difficult even to interpret expressions relying on contextual cues, like the intention of the speaker, or the social and environmental circumstances in the given situation, even for people with solid academic backgrounds. Therefore, the hypothesis that students who have a good grasp of semantics and pragmatics would perform well in all contexts of understanding semantic expressions will not be entirely supported by the results.

#### 4. Conclusion

As the findings of the current research have shown, it can be concluded that context-sensitive expressions are subject to contextual influences in their interpretation, thus being difficult to grasp through formal semantics. Accordingly, the hypothesis which indicates that it is possible for students with a good background in both formal semantics and pragmatics can be effective in decoding any form of context-dependent expression, regardless of its complexity and reliance on contextual knowledge, cannot be completely verified. Moreover, we also

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consider that context-sensitive expressions are interpreted involving the role of pragmatic processes such as implicature, presupposition, and speaker intentions, which also emphasise the interconnection and overlap between semantic and pragmatic areas. Thus, the integrative nature of the two areas of language provides a comprehensive understanding of meaning in contextualised language use. Consequently, the uncertainties of context-sensitive expression interpretation present a challenge to formal semantics, which find it hard to represent these dynamic, context-sensitive components. This problem is more relevant when combining context-sensitive words because, when several layers of context are taken into consideration, the meaning of the sentence can be interpreted in a more accurate way.

This study has two limitations; first, it is limited to a group of only 15 Master's learners. The sample size is small and thus, it interferes with the generalisation of the results. Each context-sensitive expression under investigation is addressed in the study only concerning three cases. This weakness implies that the results can be inadequate to encompass the entire spectrum of context-sensitive expression of the natural language. In order to enhance the generalizability and validity of the findings, it is suggested that future research increase the sample size to cover a wider group of respondents. This may include adding students and people of different academic backgrounds, language proficiency and cultural backgrounds. The researchers provide one more recommendation to future research, which is a contrastive study between English and Arabic in order to investigate the interpretation of context-sensitive expressions by people in various language settings. This would illuminate possible cross-linguistic differences in the usages and interpretation of these expressions as a deeper insight into the universality or language-specifics of context-sensitive language processing.

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