

Experimental pragmatics: A review of language constructing and interpreting

Zanyar Nathir Ghafar

National Institute of Technology, Sulaimaniyah,
Kurdistan Region, Iraq
Email: zanyareng92@gmail.com

Abstract - In the field of empirical pragmatics, a significant amount of research is focused on testing empirical hypotheses derived from the study of linguistic and intellectual pragmatics. Most of this study is centered on analyzing the components of conveyed meaning that Information is "inferred" rather than grasped via linguistic "coding" processes. After solely linguistic meanings have been accessed or computed, pragmatic meanings are said to manifest themselves following this approach. The purpose of the present study is to dramatically broaden the applicability of exploratory pragmatic research by calling for a much greater emphasis on the complete pragmatics of language use. People's capacity to develop and interpret language in context and real-time is hindered when pragmatic considerations are always present. The field of experimental pragmatics has to pay more attention to the particulars of practical experience. This may be accomplished by taking a more in-depth look at the participants of our research, the precise tasks used to evaluate understanding, and the complex meanings that people interpret in various circumstances. The theoretical analysis of the different physiological, linguistic, and environmental has been analyzed that go into every circumstance of meaning construction is required to fully understand the countless of specifics that make up human pragmatics.

Keywords: cognitive expectations; empirical pragmatics; psychology of language; practical language

I. INTRODUCTION

The academic field of experimental pragmatics has had substantial development during its study in the almost 40 years it has existed. In the 1970s, investigators from the field of psychology who were also interested in developmental psychology, psycholinguistics, and linguistics started looking into the meaning of pragmatic phrases. This constituted a substantial divergence from the typical emphasis placed in the psycholinguistics field up to that time on the lexical, syntactic, and semantic processing of the meaning of specific words. The question of whether or not the development of pragmatic language and its interpretation might be investigated using scientific methods was brought up by several linguists and psychologists. The decades of the 1970s and 1980s saw widespread use of the proverb "pragmatics is the waste basket of linguistics." This proverb contends that it is challenging to produce an excellent scientific order out of a disorderly and complex human activity, and it states that pragmatics is the wastebasket of linguistics. This expression means that a complicated and disorderly human endeavor cannot generate an order that can be considered scientific. According to this assertion, it is not feasible to get a precise scientific order from a human action that is complex and disorderly.

On the other hand, psycholinguists have relied significantly for inspiration from the works of pragmatics-focused linguists and philosophers (Clark, 1996; Noveck & Sperber, 2004; Bara, 2010; Noveck, 2018; Gibbs, 2019). This includes the establishment of testable hypotheses. The subfield of study known as experimental pragmatics has carved out a place within the more expansive and diverse area of cognitive research. It has also been successful in making a name for itself in the industry. Many experts in scientific pragmatics believe that the primary purpose of their study is to provide evidence to support the ideas put out by academics working in linguistic and intellectual pragmatics. Numerous experimental researches have addressed different parts of numerous language pragmatic theories positively and negatively (Noveck, 2018; Huang, 2019). These studies have resulted in both positive and negative implications for the theories. The results of these inquiries have shown both positive and negative aspects of the situation. In many experimental studies of pragmatics, it is often assumed that the word "pragmatics" refers, in a very restricted sense, to those linguistic processing aspects that are inferential and are not the outcome of previous, temporary linguistic coding decoding processes. This is a frequent but incorrect assumption. For a significant amount of time, this has been a persistent supposition.

In the beginning, humans are said to engage in a series of quick linguistic processes, one of which is detecting sounds, per this hypothesis. After that, an examination of the syntax and semantics is carried out. The creation of pragmatic meaning occurs later and is achieved using specific, pragmatic inferential strategies. For instance, determining the meaning of a speaker's sarcastic speech requires a different set of procedures than determining the meaning of a speaker's literal speech; for more detail on the typical pragmatic model, see Gibbs (1994). These methods may be performed in a generic sense to any utterances, or they can be applied selectively given certain types of linguistic input. Either way, the results will be the same. According to Noveck (2018), the modularity theories that have been so prominent in the field of cognitive science have, at the very least, had a role in developing this methodology.

This paper argues that standard theories of pragmatic meaning grossly underestimate how difficult and time-consuming the process of developing pragmatic meaning may be. This is still the case even though these general notions have been helpful to experimental pragmatics. To our way of thinking, experimental pragmatics must include more than just testing the hypotheses proposed by pragmatic language theory. According to Experimental research on multimodal communication, such as those by Shockley et al (2009) and Hollers and Levinson (2019), must give a great deal more attention to the more significant ways that pragmatics continuously influences our usage and perception of both language and non-linguistic meanings. This is because pragmatics influences our use and perception of language and non-linguistic meanings. This is something that has to be taken into consideration before experimental studies can be considered successful. The study of pragmatics is far more important than the research of specific procedures involved in inferential processing. This is because humans constantly engage in the practice of pragmatism during every second of their lives.

This necessitates the engagement of study subjects under their own free will. In order to have a deeper comprehension of experimental pragmatics, it is vital to have a more extensive awareness of the myriad ways in which the use of pragmatics on our side impacts the participants' performances in the experiments. Pragmatics is more than just one particular kind of deductive reasoning, and it is also more than simply a knowledge base separate from what is accessible at the various stages of language creation and usage (such as the lexicon, grammar, and semantics). When taken to its most fundamental level, pragmatics refers to all the adaptable answers a person has in response to various situations. In this article, a variety of interventional pragmatics research methodologies that have been used over the last two centuries are presented. It is not our objective to avoid singling out any particular individual in any way. The items listed below are examples of actions for which we are both responsible. There is also the possibility that some readers would argue that the scenario we describe is less dire than we make it out to be. However, discussion and debate are welcomed so that experimental pragmatics research may be improved, and "pragmatics" can be better managed in a more general and psychologically realistic manner.

1.1 Some problematic relates to the pragmatic process

Empirical research in pragmatics focuses mainly on the many forms of pragmatic cognition that humans use at various language usage and interpretation levels. This is one of the keys focuses of the research carried out in this area. When compared to the availability of other linguistic information sources (such as lexical, syntactic, and semantic information), or phrase in issue before turning to pragmatics for assistance when trying to identify the speaker's or writer's intended meaning for the word or phrase in question. Instead, pragmatics is the studies of how people communicate and write in such a manner that allows them to swiftly and efficiently extract meaning from the words they use (Gibbs, 1994; Gibbs & Colston, 2020). Pragmatics is the study of how people interact and write in such a way that enables them to quickly and organically derive meaning from the words they use. It is not true that pragmatics is only engaged at certain times during the use of a language, nor is it true that it is present throughout the whole of people's linguistic and non-linguistic experiences. Both of these statements are false. Neither of these statements is true (Campbell & Katz, 2012; McClelland et al, 2014; McRae & Matsuki, 2013) The overwhelming majority of the theoretical models used in psycholinguistics today agree that pragmatics restricts every facet of cognition. To do this, offering access to prior

pragmatic background knowledge and more locally specific contextual information is often necessary.

However, the two assumptions that need to be clearly stated in the study that's been done traditionally on interventional pragmatics are the ones that give us pause. To begin, it is astounding how little is said about what it signifies when it is claimed that a pragmatic message has been "understood" (for example, "This soup needs salt" implies "Pass me the salt"). Although "understood" is often reserved for describing a pragmatic message, this is the case. It is often believed that achieving pragmatism in one's knowledge is the ultimate objective that all individuals, regardless of the circumstances in which they find themselves, should strive to accomplish. However, communities are cognitive and personality features and knowledge of what motivates them may vary greatly depending on the situations to which they are exposed. These differences can also be seen in how individuals interpret motives. It is necessary for any effort at a theoretical characterization of how individuals interpret pragmatic communications to consider these individual differences, both within and between people. This is the case whether the endeavor is inside or between people.

Second, in practical pragmatics, a wide range of activities are used to determine the level of linguistic understanding possessed by the individuals who take part in the study. These task demands substantially influence the underlying pragmatics of any experimental inquiry; for instance, developmental studies have struggled for a very long time with the question of how explicit and unconscious task demands affect behavioral results in cognitive and linguistic investigations. This question has been at the center of the debate for a significant time. On the other hand, the conceptual interpretations of experimental data that professionals supply need to address this component of practical experience entirely. In addition to these problems, another problem is that relatively little time is spent in experimental pragmatics determining the meaning of "products" that people convey or grasp in contexts that include the use of language in daily life. On the other hand, the "processes" through which language is learned, produced, and understood are the key focal point of this study's principal emphasis.

When doing experimental pragmatics, it is possible that ignoring pragmatic "products" to a substantial degree might be highly expensive. We are under the incorrect assumption that there is a distinguishable "click of comprehension" experienced by the receiver when pragmatic signals are just received and understood. This is not the case. This, however, makes the incorrect assumption various pragmatic meanings. This is an assumption that is not valid. This problem also underscores the need to considerably extend our knowledge of pragmatics by paying much more attention to the activities in which participants are entirely involved across various experimental circumstances. This may be accomplished by paying more attention to the activities in which participants engage.

1.2 Personal Variation

According to Huang (2019), most of the hypotheses in the study of linguistic pragmatics thoroughly explain how Practical meanings are used and understood by everyday people. It is customary to assume that the speaker or listener is an ideal adult with unimpaired neurological, brain function and linguistic abilities while addressing these theoretical topics. This is done to make sure the conversation runs as smoothly as possible. A sizable body of research has looked at the differences in pragmatic language abilities, including those of children who are still developing these skills, atypical children, and adults who might be constrained by brain injury, illness (such as Alzheimer's), or developmental

conditions (such as autism) (Cummings, 2019). Children still learning these skills, abnormal children, and adults are all included in this study. The participants in this study are youngsters at an age when these talents are still being developed – children and people who deviate from the norm.

On the other hand, popular thinking maintains that consistency in using pragmatic language nearly usually indicates deficiencies in pragmatics. If this is the case, then the normal and normative function of pragmatic talents needs to be achieved, which is in direct opposition to what one would expect to be the case. Despite this, a substantial amount of knowledge illustrates how individual variances have a considerable influence on people's performance in experimental pragmatic investigations. This information comes from studies that have been conducted. For instance, a rising number of studies suggest significant differences between and among the individuals who participated in experimental research. Think about some of the personal qualities that have been found to impact the usage of and ability to understand figurative language via empirical research. Language experience, gender, occupation, social status and culture, political background and beliefs, cognitive characteristics (such as IQ and working memory), bodily action, place of origin, personality, social relationship, and common ground are some of the characteristics that fall into this category (Gibbs & Colston, 2020). Other characteristics include common ground and social relationships. The method in which readers perceive literary techniques such as symbolism and irony, in addition to the specific interpretations of certain tropes that they supply in response to many different experimental situations, is influenced in its whole by each of these components, each of which has its distinct impact on the matter. Many academics working in empirical by many scholars working on empirical pragmatics may disagree with this statement. Our position is that trying to account for individual variations and, consequently, removing the requirement to do so misses the underlying complexity of practical experiences. Doing so would eliminate the need to do so. The reason behind this is as follows.

Individual variances are more than simply "noise" in the background when it comes to a system of meaning-understanding that is normative and pragmatic. It is a well-established fact that each individual's distinctive qualities constantly play a significant role in the attitude necessary for pragmatic activities. The individual variations between persons have an effect, as well, on the pragmatic ways in which people behave in experimental situations. This effect might be positive or negative. The participants in an experiment that made use of experimental pragmatics, for instance, would typically be given a sequence of stimuli that represented several independent circumstances and asked to respond in a manner that had been predefined. When we do experiments, we often take the average of individuals' responses to the various triggers. It is often regarded that the evaluation of means is the most appropriate descriptive statistic that can be utilized in order to achieve this aim. This is because the purpose of the experiment is to capture some information about the fundamental patterns in the reactions of individuals to a variety of different experimental conditions. The use of means or averages, as opposed to experimental research, conceals the higher complexity of the pragmatic behavior of individuals.

Experiments in experimental psychology have shown that different people react to the same stimuli in predictable ways Gibbs and Van Orden (2010) and Raczaszek-Leonardi and Kelso (2007). Research has shown these phenomena. The experimental psychology area of psychology is affected by these findings. Comprehensive justifications

for individual's experimental results may be found by analyzing response distributions, such as reading lengths. One such explanation is that individuals act as self-organizing dynamical systems while participating in the experiment (Gibbs & Van Orden, 2010; Gibbs, 2017). This can be discovered by examining the distributions of responses, such as reading durations. Gibbs and Van Orden (2010) were the ones who first offered this idea, and Gibbs (2017) is the one who provided evidence for it.

As a direct result of this, we have to be very careful not to fall into the trap of assuming, as is all too often the case, that the independent variable can only be generated by a specific, stand-alone process (such as pragmatic competence), which is a mistake that we need to avoid making at all costs. Gibbs and Santa Cruz (2012) suggest that many independent factors may only have a moderate impact on the behaviors that individuals take while engaged in experimental pragmatic tasks. This influence may be probabilistic. In this paper, the results of experimental pragmatic research do not only summarize participants' reactions to the many experimental settings and underlying independent factors. Paxton and Dale (2017) and Abney et al. (2018) discovered that people's unique organizations, social norms, characteristics, and experiences gradually affected their pragmatic behaviors in every experimental setting. Paxton and Dale (2017) and Abney et al (2018) both came to this conclusion after conducting their studies. In this way, pragmatism affects both the results have uncovered and the inferences we have drawn from those discoveries.

1.3 Investigational Evaluation

It may be challenging to create a definition acceptable for the range of tasks utilized in experimental pragmatics, as stated by Jucker et al (2018). On the other hand, participants in a typical experiment in experimental pragmatics are presented with a set of stimuli and then asked to choose one of some different alternatives to a problem. This is done in order to investigate the relationship between the two. In contrast to how the stimuli were presented in the previous example, this one is presented differently. One of the things that are valued the most by many people. According to Gibbs (2019), one strategy that has been advocated for solving this problem is to assign the most weight to experimental results consistent over many distinct experimental tasks. This is referred to as the "converging operations" approach. However, according to Kecskes (2014), creating universal experimental results across an extensive range of persons, languages, cultures, and job demands may still be tough, if not impossible, to achieve. According to a different point of view, the theoretical talks that should be the ones that are debated are the ones that should place the most emphasis on those that have the most outstanding level of convergence across people and tasks.

On the other hand, arguments that are predicated on the "weight" of scientific facts may be far less compelling to scientists since scientists want consistency and dependability in the findings of tests. Some researchers could take an alternative approach to the problem of task demand in experimental pragmatics by suggesting that some task settings, such as assessments of eye movements, are superior to others, such as entire phrasal or sentence reading durations. Arguments quite similar to this one often suggests that some task measures are superior to others as indicators of pragmatic language use in settings referred to as the "real world." Experiments that use the suggested approach should be given the most weight in the debates over the substance of pragmatic theories. This point of view states that such debates now take happen. It is vital to note that using this strategy to resolve the problem of task demand may sometimes result in total empirical deadlocks. This is something that has to be mentioned since it is crucial. This is

because different researchers accept the results of their favorite experimental paradigms while rejecting or undervaluing the findings of less well-liked experimental methods. This is because different researchers accept the findings of their preferred experimental paradigms.

The alternative viewpoint, a component of our more comprehensive view of experimental pragmatics, maintains that task-specific pragmatic language use is always the case, regardless of whether the research is conducted inside or outside an experimental context. This is true regardless of whether the study is conducted within or outside an experimental environment. The processing of functional language is not a task-free and systematic method. Instead, it involves a lot of different steps. Speakers and listeners approach any transaction involving spoken or heard language with planned or implicit goals in mind. This is true whether the interaction involves language being said or heard. For instance, a person in the audience could find oneself questioning, without realizing it, if the message of a political speech was compelling or whether they agreed with what the speaker said or the author wrote.

This might happen because of several factors. When individuals listen to language in certain situations intending to remember what was said, as a consequence, they can pay more attention to individual words and the meanings of those words than they would in a conversation that is much more casual. This is because the people listening to the language intend to remember what was said. The context strongly influences the criteria that individuals use while attempting to comprehend the meanings of what other people are saying. These criteria are different from one another. It is now necessary for researchers, in a more general sense, to consistently add task requirements into any experimental pragmatic setting. It is feasible that some pragmatics theories must be explicitly changed to account for the enormous diversity of activities that participants in different studies must accomplish. These individuals come from various backgrounds and participate in many research projects. It may be challenging to construct all-encompassing theories capable of competing with the constraints of experimental investigation. When seen in this light, the pragmatic constraints put on every experimental task provide yet another piece of evidence in favor of the claim that pragmatics is always an essential component in how humans understand the use of language.

1.4 Pragmatic Experience's showiness and Prosperity

One of the obstacles that researchers confront when conducting experimental pragmatic studies is that the links between task-dependent findings and pragmatic hypotheses are more nuanced than is often assumed. Consider a study that explores the mental work required to appreciate the practical value of a scenario, such as quickly absorbing a new metaphor or arriving at an ironic conclusion. One example of this kind of study is the research conducted. Numerous hypotheses about the method by which humans make sense of the many different forms of pragmatic meaning are routinely tested by analyzing the figures that pertain to the amount of time spent reading.

When people read or listen to a discussion, we wonder whether they automatically infer a particular meaning from the language being used (for example, literal as opposed to figurative, non-metaphorical as opposed to metaphorical, conventional as to unique metaphorical meaning). For example, even if we are the only people participating in an experiment, our incentives as readers go well beyond the mere retrieval of a particular "meaning." They encompass diverse human phenomenological experiences, such as generating more practical conclusions relevant to the circumstance, feeling various emotions, appreciating the aesthetics, or envisioning what scholars could

say in response to someone else's words. Even if no other people were involved in the experiment, this would still be the case. For instance, it may take some time for each of these perceptions, feelings, and aesthetic responses to comprehend and recognize that a straightforward metaphorical statement has a "metaphorical" meaning rather than a "literal" one in the context in which it is employed. This may be because the "metaphorical" meaning is more abstract than the "literal" one.

Another example demonstrates how the amount of effort placed towards grasping a speaker's message may make separate meanings more or less idealized significant (Sperber & Wilson, 1995). This example demonstrates how distinct meanings may become more or less idealized and relevant over time in varying degrees. According to Gibbs (2010), it takes longer to read the figurative phrase "My marriage is an icebox" if the speaker is discussing the current status of his marriage rather than answering the question, "Are you happy in your marriage?" It takes less time to read the statement if the speaker is responding to the question, "Are you happy in your marriage?" The query "Are you happy in your marriage?" has been posed before, and the response "My marriage is an ice box" effectively conveys a "no" response to that issue. As a result, the readers do not need to deduce any of the possible metaphorical implications that might be attached to the sentence "My marriage is an icebox." For example, my marriage is the source of mental stalemate and constraint, which stops both of us from making progress.

To "comprehend" anything is to figure out what the speaker is attempting to say regarding pragmatics, society, and aesthetics. To "comprehend" something pragmatically means to do this. This is a component of the overarching idea that is "comprehension." If we want to widen the applicability of experimental pragmatics, we need to pay greater attention to the particular, pragmatic readings that individuals really derive as well as their esthetic and psychological responses in context. It is essential to create experimental situations in order to learn when and how certain pragmatic signals are sent and assumed, as well as when more important or less specific meanings and viewpoints become apparent at the same time.

1.5 Illustration Using a real-life study

It takes a lot of work to do experimental studies on pragmatic language usage. As was previously indicated, numerous researches have produced inconsistent results about how individuals pragmatically generate and evaluate distinct communication meaning components. As a result of the contradictory nature of the results, this topic was brought up. The so-called "replication crisis" is a problem that is affecting research in psychology as well as in other areas of science. This crisis is linked to considerable discrepancies in the outcomes of tests. Failures to replicate are being reported at a pace that has never been seen before, and some academics suggest that any deviation from an empirical norm should be read as calling into doubt the authenticity of a previous experimental result. This is true both for precise replications and conceptual replications. Every one of these countless empirical discoveries can be theoretically and properly repeated, and several of them have already been replicated, although in a slightly different form. This is because it is very improbable that replication attempts would somehow filter through this range of experimental results to give a straightforward and complete collection of evidence that speaks to a single conceptual model of ironic understanding.

For example, constraint-satisfaction models, which can be found in Campbell and Katz (2012) and Caffarra et al (2019), highlight numerous constraint systems that work readily to create relevant ironic interpretations in a variety of circumstances that are specific to both the task that is currently being performed and the person who is carrying

out the activity. These circumstances can be found in a wide range of contexts. Because the people engaged come from various places, have different personalities, and find themselves in various situations, every time they take part in linguistic communication, it is like giving them a new challenge to complete. It is difficult for a single assignment to adequately express the complex psychological reality that drives how different people respond to varying word or phrase combinations. This reality cannot be captured in a single assignment. Mind and body have to be entirely separate entities to fulfill the requirements of every single job constraint and necessity.

Both the mind and the body are complex systems, so they can self-organize to meet the needs of a specific job. This ability allows both the mind and the body to do various tasks. They cannot mentally and physically prepare for task-appropriate utterances in timed comprehension responses or respond as necessary in an experimental context due to the limitations imposed on the mind and body by the physiological representation of task expectations. As a result of these limitations, they cannot prepare for task-appropriate utterances in timed comprehension replies. Much like research in many other pragmatic meaning domains, the bulk of experimental investigations on irony comprehension begins with the premise that the end result of understanding is a message that can be defined as "ironic." This is true for the majority of experimental investigations on irony comprehension. On the other hand, the content of these interactions is susceptible to significant alterations in meaning depending on a wide range of interpersonal and environmental conditions. These shifts may occur for many different reasons. When someone hears the phrase "A fine friend you are!", they may rightly conclude that the speaker is not supporting them since the speaker is expressing that they are a good friend. This may lead them to feel that the speaker does not support them.

On the other hand, the precise interpretation that is generated typically involves meanings that are more nuanced than "You are not a good friend," such as "the participant had anticipated me to help him in my capacity as a good friend and was now scolding me in the hope that my future actions will be more cooperative." These more sophisticated pragmatic effects may be described as primary behavioral responses in a controlled scenario. One example of this would be observing a person's eye movements while they read to determine whether or not they are ironic. The second purpose will be to analyze the connections between emotional and affective reactions individuals may have while reading or listening to sarcastic remarks, as well as the experimental settings unique to the job at hand and the specific ironic messages understood. New information for the study of pragmatics may be gleaned via experimental pragmatic analyses of such things as people's intrinsic complexity, the declared professional demands of their occupation, and the underlying human goals of individuals.

II. CONCLUSION AND RECOMMENDATION

It can resolve these problems by adopting a holistic perspective on experimental pragmatics. There are various essential steps to comprehend better the difficulties involved in using pragmatic language. Before experimenting, researchers need first to determine the specific individuals they will be observing and any potential implicit or explicit instructions given to the experiment's participants. There is no starting point for utterance interpretation, nor is there a setting devoid of tasks and contexts from which it may ultimately advance to produce pragmatic interpretations. In the first stages of linguistic processing, concepts of linguistic pragmatics have to consider that all uses of

language occur within a pragmatic context. This is a necessary step. It is inaccurate to say that human conduct comprises isolated pragmatic activities utterly independent of other psychological structures and functions. People utilize speech to achieve a variety of communication goals that are intricately connected to other physical activities. These acts govern posture, hand and arm motions, eye contact or movement, laughing, and other behaviors.

According to the findings of the overwhelming majority of research conducted, the study of cognitive science (Clark, 1996; Gibbs, 2006) has shown that these different kinds of bodily acts seem to be "coupled" with one another regarding time and place. According to Gibbs (2006), Shockley et al (2009), and Colston (2019), individuals have the potential to improve their ability to cooperate and coordinate their efforts in order to accomplish a wide range of personal and societal objectives. When analyzing their data, researchers often fail to consider the complex and numerous realities of the actual world and instead continue to draw more comprehensive theoretical conclusions based on the specific discoveries they have unearthed.

The term "pragmatics" does not refer only to a later-emerging, temporally separated inferential process during real-world language use. Instead, this description is incomplete. Our suggestion for a more in-depth knowledge of experimental pragmatics has as its ultimate goal the expansion of the meaning of the term "pragmatics" as it is employed in the prominent theories of linguistic pragmatics. For example, linguists and philosophers may not include in their original works on pragmatic theory the difficulties related to individual variances and labor needs. On the other hand, the ambitions of pragmatism and the realities of pragmatism concerning human development must not be split apart. The challenges that real people face while attempting to behave pragmatically should not be at the forefront of the research and theory developed in language pragmatics.

On the other hand, pragmatism shows the whole body in motion by observing how people carry out a variety of activities while being highly impacted by broader interpersonal, societal, and cultural contexts. This is because pragmatics emphasizes how individuals communicate with one another. Think of pragmatics as a system consisting of numerous boundaries, all of which work together to influence how humans behave in adaptive circumstances. If we do this, we will have a much better idea of what pragmatics is all about. This more all-encompassing viewpoint encompasses the concept that pragmatics has to be regularly addressed and carefully examined in the framework of experimental pragmatic studies because the relevance of this area of study is constantly evolving.

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