LLT Journal, e-ISSN 2579-9533, p-ISSN 1410-7201, Vol. 29, No. 1, April 2026, pp. 235-258

LLT Journal: A Journal on Language and Language Teaching
http://ejournal.usd.ac.id/index.php/LLT
Sanata Dharma University, Yogyakarta, Indonesia

UNPACKING PRAGMATIC INCONSISTENCIES: CONTEXTUAL CUES IN SCALAR IMPLICATURE COMPREHENSION

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https://doi.org/10.24071/llt.v29i1.371
received 26 May 2025; accepted 13 February 2026

Abstract
It is crucial to understand how language users interpret scalar implicatures, particularly the words "some" versus "all," to enhance pragmatic competence in language learners and artificial structures. This research explored how respondents reconcile literal and implied meanings and what contextual elements facilitate accurate scalar interpretation. It sought to understand how disagreement between literal and implied meaning is resolved by respondents and what contextual data supports correct scalar interpretation. A quasi-experimental design was used with ten 17–20-year-old Telugu-speaking students with no training in pragmatics for an in-depth, qualitative investigation of their linguistic behaviour. Materials included 15 visual-narrative stimuli, warm-up trials, fillers, and pre-and post-test questionnaires assessing scalar understanding and contextual cue awareness. Respondents underwent a pre-test, exposure to context-rich stimuli, and a post-test. Findings demonstrated significant improvement following intervention: the respondents who had moderate performance in the pre-test passed to the near-ceiling performance in the post-test to detect the mismatch of some-all, systematically rejected pragmatically odd but logically true utterances, and reported a better contextual-cue awareness (pre-test means 3.2-3.5 to post-test means 4.7-5.0), demonstrating the evidence of the improvement in scaling-implicature detection and pragmatic anomaly repair. These results directly address the research objectives and show the efficacy of multimodal cues in fostering pragmatic comprehension. The study proves that contextual teaching greatly enhances inferential pragmatic ability in L2 learners. A larger, more heterogeneous sample, objective tests (eye-tracking), and an experiment of subtler implicatures in virtual reality should be used in future studies.

Keywords: contextual cues, inferential reasoning, pragmatic inconsistency, scalar implicature, second language learning

Introduction
Scales implicatures enable the audience to make literal inferences that extend beyond the literal semantics: when a speaker uses some, it is reasonable to infer not all, although it is logically consistent with all (Chapman, 2020). Classical Gricean

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theories position implicature in the operation of cooperative principles of conversational behavior (Grice, 1989), whilst Neo-Gricean, rule-based theories project default mechanisms that generate alternatives in default. Relevance Theory, in its turn, views implicature as an inferential, context-sensitive process compelled by the optimum relevance search and considers the cognitive effort and situational evidence to be the most important components of pragmatic computing (Sperber & Wilson, 1995). These opposing stances come to a common realization: implicature is not a straightforward lexical mapping, but an inferential venture, with the interaction of linguistic form, context and processing resources.

This complexity has been supported by empirical studies that have recorded a huge variation in the timing and manner of the emergence of implicatures. Recent literature maintains that implicature derivation variability is systematic and is due both to linguistic (lexical choice, sentential structure) and methodological (task design, response format) effects, meaning that computation is contingent as a variable between settings (Khorsheed & Gotzner, 2023). Complementary studies have also been done on sentential and discourse contexts, which indicate that implicature production is highly restricted or licensed by local linguistic contexts (Aparicio & Ronai, 2025). Collectively, the above results indicate that any plausible explanation of the phenomenon of scalar inference will have to combine sensitivity to linguistic form, discourse structure, and the requirements of specific experimental tasks.

One of the empirical strands that is closely related is the questioning of individual and group variations, particularly between native speakers and second language (L2) speakers. Research indicates that L2 learners often have slower, less robust or less stable implicature derivation than native speakers-tendencies that have been attributed to lower levels of automaticity, paucity of pragmatic experience, and increased cognitive load in comprehension (Kecskés, 2022; Mognon et al., 2025; Tehan & Shetreet, 2025). A good deal of this L2 research, however, presupposes comparatively stable or unimodal situations; it generally studies performance in textual or auditory tasks, with multimodal cues manipulated and/or measured in an unstructured fashion. Consequently, there are still concerns as to how L2 learners divide attention, process multimodal information, and update inferences when there is a discrepancy between linguistic and extralinguistic information.

The problem of pragmatic inconsistency, situations where literal truth values are inconsistent with contextual evidence, offers a sharp testbed to these problems. When a speaker makes a logically true remark that, however, does not align with situational indicators (e.g., saying that some of the students passed, pointing at a pile of all the students graduated papers), the audience, in turn, has to resolve literal word and situational evidence, and this resolution, in some cases, results in reanalysis (irony, sarcasm) and dismissal of the implied alternative (Eragamreddy, 2022; 2023; 2024a; Nicolaescu, 2022). These cases underscore the fact that implicature computation is conversational and usually depends upon the salience and trustworthiness of the contextual cues. They also demonstrate a gap: the available L2 studies have not conducted a systematic investigation of the manner in which bilingual students alleviate literal-pragmatic conflict in cases where meaning has to be communicated across modalities.

The resources through which the hearers limit and control the pragmatic alternatives are called contextual cues that include linguistic, prosodic, visual, and situational cues. Psycholinguistics and discourse processing literature show that an implicature may be significantly reinforced or diluted by visual context and prosody to raise its cue salience and minimize inferential load (Degen & Tanenhaus, 2015; Spychalska et al., 2021). Such multimodal cues can be especially consequential in L2 contexts, where resources used in processing have been taxed and providing enough metapragmatic knowledge may be limited. Such multimodal cues can scaffold inference by increasing the relevance of alternative options, direct attention to disambiguating information, and supply redundant evidence that reduce the use of linguistic heuristics. However, the empirical evidence of these allegations in the context of the non-native listeners, particularly those with typologically and pragmatically different L1 backgrounds, is few.

It is a notable lack of paucity considering the pedagogical and technological stakes. Pragmatic awareness can be enhanced by explicit contextual instruction (Haselow, 2021) and recent studies on benchmarking pragmatic understanding (Li et al., 2023; Mao et al., 2025) are mostly based on text- or dialog-based tasks that fail to reflect multimodal situated interaction. The resultant outcome is the lack of correspondence between theoretical frames of multimodal inference and the resources employed in the L2 pedagogical and assessment practices. Sealing this divide would inform classroom interventions that induce metapragmatic skill and inform the creation of language technologies that are more competent at understanding or producing contextually relevant implicatures.

To this end, the present research directly fills this gap by testing the hypothesis that multimodal contextual training that entails the presence of both the visual and narrative cues within the context of controlled stories can help the Telugu-speaking learners detect and correct the scalar implicature violations. The emphasis on Telugu speakers offers a very informative example since their L1 pragmatics and teaching background frequently focus on grammatical fluency rather than direct pragmatic instruction, which provides a realistic and realistic population of a classroom that can be best served by multimodal scaffolding. The study, based on a quasi-experimental design, involving truth-value judgments, acceptability ratings, response time, and eye-tracking, and open-ended reflections, explores the effectiveness of multimodal cues in detecting pragmatic inconsistency, contextual cue sensitivity, and reconciliation strategies in the case of a conflict between literal and implicated meanings.

This introduction sets the context of a narrow empirical study question: Do multimodal context training techniques lessen the dependency of literal readings and encourage learners of a second language to use pragmatic interpretation that is adaptable and contextually sensitive? The research answers this question both in the context of theoretical synthesis and practice. This work, therefore, fills a direct gap: how and why contextual cues help or hinder the computation of scalar implicatures under pragmatic inconsistency by answering the following research questions:

1. What types of pragmatic inconsistencies affect scalar implicature interpretation?
2. What contextual cues influence scalar implicature comprehension?

3. How do language users reconcile inconsistencies between literal and pragmatic meanings?

Literature review

Scalar implicatures, based on the Cooperative Principle by Grice (1989), are attributed to the use of the weaker term by a speaker, "some" in this case, in such a way that the use of the stronger term, "all," would be implied. Although Neo-Gricean views such as those of Horn (1989) and Levinson (2000) suggest default inference processes based on rules, Relevance Theory (Sperber & Wilson, 1995) disagrees. It contends that implicature is extremely contextual and cognitive; it is shaped by the effort of a listener in trying to establish the most appropriate meaning. This conceptual contention of rule-based and relevance-based strategies is the basis for the inquiry about how contextual cues (Nicolaescu, 2022) can affect the comprehension of implicatures of a person during real-time interaction.

Scalar implicature processing

Psycholinguistic theories that compete with each other in examining scalar implicatures also discuss whether they are computed automatically as a default (Levinson, 2000) or are computationally expensive (Kecskés, 2022). The latter is always supported by empirical evidence of eye-tracking and ERP studies, which show that the processing speed of scalar inferences is slow, and that context is beneficial in this situation (Spychalska et al., 2021). It is also indicated in developmental research that the development of the capability to compute implicatures in children is increased in a sequential way, which relies on the cognitive and linguistic development (Purnami, 2025). Moreover, cross-linguistic research indicates that such inferences are limited by language-specific pragmatics (Bott & Noveck, 2004). Such psycholinguistic data highlight the important findings that to compute implicatures, such as understanding "some" as not "all" demands a great deal of cognitive processing time and effort, and against this point, contextual and cognitive information are critical factors in understanding language in real-time (Bambini & Domaneschi, 2024).

Pragmatic inconsistencies

Pragmatic contradictions are those that occur due to the conflict between the intended meaning of an utterance and the contextual messages (Birner, 2025). An example would be when a speaker claims, "Some students submitted their work", and looks at a stack of papers, the "not all" implicature conflicts with the obvious truth. Such discrepancies cause the listeners to reconsider the purpose of the speaker, which may make them understand the phrase as ironic or sarcastic (Kissine, 2016). This highlights the interactive nature of language input and prior knowledge and requires an exceptionally high level of metapragmatic knowledge (Attardo, 2020). According to studies like Apresjan and Orlov (2022), Eragamreddy (2024b), e Cunha et al. (2023), Khorsheed and Gotzner (2023), and Marty and Romoli (2022), individuals proactively modify the content of their interpretations when they come across these differences. This demonstrates that pragmatic inconsistencies provide a significant window into how individuals comprehend information in real-time conversation.

Contextual cues

For pragmatic comprehension, contextual cues like verbal, prosodic, visual, and situational details are crucial. They have significance for determining scalar implicatures and clarifying ambiguity because they allow listeners to go beyond a literal interpretation to reconstruct the speaker's intended meaning (Eragamreddy, 2024b). For instance, as revealed by Alsmari (2024) and Degen and Tanenhaus (2015), implicature can be strengthened by visual cues and prosody. Listeners can also modify or suspend default conclusions with the aid of contextual factors, including speaker predictability (Birner, 2025). This evidence reinforces the theory that pragmatic interpretation is created in real-time communication from multimodal information as opposed to being predetermined.

Scalar implicature in L2 processing and pedagogical implications

The studies of second language (L2) pragmatics are always brought to the point of persistent challenges to non-native speakers that stick even at a highly competent level. In comparison to natives, the L2 learners tend to be more dependent on literal semantic meanings and slower or less reliable in making context-sensitive inferences, like understanding some as not all (Bott & Noveck, 2004; Mognon et al., 2025). This asymmetry is not just a problem of linguistic competence but more of processing constraints such as less automaticity, less pragmatic experience and higher cognitive load in real-time comprehension. Those processing constraints are most acute in the situations of pragmatic inconsistency, where literal truth values are in conflict with default implicatures. Where native speakers prefer flexibly revising or suspending implicatures to reconcile contextual contradiction, the L2 learners might have difficulties in integrating conflicting cues, resulting in either overgeneration of implicatures or failure to correct pragmatic anomalies (Eragamreddy, 2024b). This makes pragmatic inconsistency an important point of stress in the process of L2 comprehension, which unveils the weaknesses in the capability of coordinating linguistic input with contextual evidence in learners.

In pedagogical terms, as a result of these findings, it is not possible to build up pragmatic competence via decontextualized or text-only instruction. Since scalar implicature processing is cognitively challenging and context sensitive, like in the case of L2 learners, teaching and learning tasks should be focused on cue integration and inferential flexibility. A variety of multimodal input, including visual context, framing by narrative, and situational cues, can alleviate inferential load, boost cues' salience, and steer learners to more pragmatically relevant inferences when there is undermining of default inferences. Therefore, pragmatic inconsistency not only constitutes an error in the learners but is a fertile teaching location in creating pragmatic awareness, adaptability, and metapragmatic reasoning in second language learning.

Method

The explanatory sequential design, which employed the one-group pretest-posttest quasi-experimental design, was applied in this research that utilized both quantitative data, including truth-value judgments, response time, and eye tracking, as well as qualitative data collected with the help of open-ended questionnaires (Taherdoost, 2022). This plan explored the use of context in the interpretation of

scalar implicature and the circumstances surrounding the occurrence of pragmatic anomalies. Experimental specificity and ecological validity were achieved through the use of controlled narrative stimuli, which incorporated scalar adjectives and multimodal discourse cues. Warm-up items and fillers kept attention and filtered unresponsive answers. Respondent familiarity, demographics and interpretive strategies were measured using pre- and post-test questionnaires. This structure isolates scalar implicature violations and explores the solution to literal-pragmatic conflicts. The homogeneous purposive sampling reduced the confounds and enhanced internal validity (Andrade, 2021).

Sample

A total of ten undergraduates aged 17-20, in a state university, were recruited using purposive sampling after they could converse in Telugu. Telugu was chosen as it is a linguistically and pragmatically different L1 background to English, and thus processing of scalar implicature in learners whose first language is different in encoding quantity and pragmatic inference could be studied. This renders this group especially appropriate when it comes to exploring conflict resolution between literal and pragmatic inference among non-native speakers. The study respondents were similar in terms of the level of education and were taught English in a formal way, but with a pragmatic focus on grammar instead of pragmatic training. English proficiency was considered intermediate level, which entailed passing the university English courses with success and a test score on the placement test matching the B1-B2 ranking of the CEFR scale. None of the respondents was taught about English pragmatics or scalar implicature in advance, and this level in terms of pragmatic awareness was similar.

There was no familiarity with the experimental narratives and stimuli, and this reduced the effects of familiarity and contributed to an objective rating of pragmatic understanding. Although the one-group pretest-posttest design can be used to study developmental change following the intervention, the lack of a control group implies that the improvements should be explained, which can be the familiarity of the tests with the subject or other extraneous factors instead of the intervention itself (Barker et al., 2024; Capili, 2024).

Respondent demographics

Table 1 includes a summary of the important demographic data of the ten purposively chosen Telugu-speaking undergraduates: age range, native language, education level, and English proficiency. The provision of this information determines the homogeneity of respondents, which is essential in the interpretation of scalar implicature performance without demographic confounders. Having the same background in language and education ensures that differences in responses are related to the experimental manipulations and not any other external stimulus, the difference in the level of proficiency or even the school systems. This inclusion of these demographics will enhance internal validity, offer replication transparency, and enable pragmatic inconsistencies that disrupt expected scalar inferences and conflicts between literal meanings and pragmatic interpretations and contextual cues that guide implicature derivation and variability in implicature comprehension due to contextual variances by ensuring that all judgments and interpretations are assessed in a similar context for each respondent.

Table 1. Respondent demographic details

Respondents	Age	Gender	Native Language	Studied English pragmatics before	Heard any of the stories used in this research before
R1	17	Male	Telugu	No	No
R2	17	Male	Telugu	No	No
R3	18	Male	Telugu	No	No
R4	19	Male	Telugu	No	No
R5	19	Male	Telugu	No	No
R6	18	Female	Telugu	No	No
R7	17	Female	Telugu	No	No
R8	20	Female	Telugu	No	No
R9	19	Female	Telugu	No	No
R10	20	Female	Telugu	No	No

Materials

The experimental materials were fifteen short narrative stimuli that were aimed at evoking scalar implicature interpretation of the quantifiers '*some'* and '*all.'* Both narratives created a visual and situational context through the use of toys and props and ended with a test sentence that was produced by the puppet, which included a scalar expression. The stories were made to either force or test the compatibility or incompatibility of the literal truth of the test sentence with its pragmatic suitability in the context provided. Out of the fifteen stories, seven were target items, i.e., the test sentences were logically correct but pragmatically incoherent (some used in a situation where everything was visual), which brought about pragmatic inconsistency. Five stories that served as filler items (two logically true and three logically false) were used to avoid strategy-of-response and ensure that the respondents were kept active. The rest of the three stories were warm-up stories, one of them veridical, and the other one a misleading story, which were meant to introduce the respondents to the format of the task and the way they were expected to respond, but not to sensitize the respondents to pragmatic violations. A target stimulus is given.

In the tale, a puppet takes all five apples and puts them in a basket. The last statement is: "*Some of the apples are in the basket*." Though that is literally correct, it is pragmatically inappropriate in this scenario, since the visual evidence is in favour of an otherwise stronger alternative (*All*). Every story was performed with the help of the standardized props, filmed with a digital camcorder, and edited into a single 20-minute performance. The stimuli were displayed through the use of a computer and a projector to ensure standardization of presentations in terms of delivery of linguistic, visual, and situational information to the subjects. Two senior pragmatics researchers went through the items to make sure that the datasets were consistent with well-established scalar implicature paradigms based on Gricean and Neo-Gricean frameworks, and with processes as reported in previous studies.

Procedure

Institutional advertisement was used to recruit respondents who were informed to participate. Individual sessions were performed in a noisy room. The stimulus was delivered on a laptop, and a projector and the eye movements were measured during the task by means of a desktop-mounted eye tracker with a sampling rate of 120 Hz, and the calibration of the tracker was done at the very start of every session. The experiment had a Truth-Value Judgment Task (TVJT) paradigm that was based on Zhang et al. (2023). The questionnaire used was a pre-test questionnaire that contained demographic data and ensured that respondents were not familiar with the narratives. The respondents were oriented to the task using two warm-up stories (a veridical and a misleading story).

The respondents were then shown 15 fixed-order video narratives that had a scalar statement at the end of each. The respondents were asked to give a binary truth-value judgment (true/false) after each statement, and their answers answered for types of pragmatic inconsistency. They then rated pragmatic acceptability in a 5-point Likert scale to inform role of contextual cues. Self-paced responses were used, and response times were measured automatically between the statement offset and to response. Eye movements were recorded using a desktop-mounted eye tracker sampling at 120 Hz and controlled via Tobii Pro Lab software. Gaze measures, including first fixation duration, total fixation duration, and regressions to contextually relevant regions, were analyzed, as these indices are widely used to capture real-time processing effort and cue integration during pragmatic inference resolution. This eye-tracking measure was employed to answer resolution of conflicts between literal meanings and pragmatic interpretations. Filler trials were introduced in between to keep the attention. Lastly, a post-test questionnaire with free-form answers solicited responses from the Respondents and suggested revisions, which further informed reconciliation strategies. Small incentives and a debriefing of the respondents were provided.

Instruments and research questions alignment

Behavioral, temporal, gaze-based, as well as qualitative measures were conjoined to address the three research questions in order to achieve methodological triangulation. Although both pragmatic inconsistencies and contextual cues require the judgment of respondents, the subjective data were accompanied by response-time and eye-tracking data to enhance the validity of inference and to minimize the use of introspective reports only. Pragmatic inconsistencies, which looked at the nature of pragmatic inconsistency, was measured in terms of binary truth-value judgments and rating of acceptability, which enabled the determination of instances where literal truth contradicted pragmatic suitability. Contextual cues, which studied the role of contextual cues, relied on manipulated contexts of the narrative and open-ended explanations of respondents and was triangulated with gaze placement to contextually salient areas. Response-time measures, eye-tracking indices, and post-test reflections were the main sources of information used in resolution of conflicts between literal meanings and pragmatic interpretations.

The processing of response times adhered to standard psycholinguistic procedures (e.g., eliminating the values less than 200 ms and more than 2.5 SDs of the means of the respondents), which is compatible with the recent RT-cleaning models (Baayen & Milin, 2010). Eye-tracking studies were based on fixation-

related measures that relate to inferential difficulty and reanalysis. Supporting tools such as pre-test questionnaires, warming-ups, and filler items were used so that the respondents would be engaged, comprehend the tasks, and the internal validity would be achieved. In order to have a clear outline of the way these various streams of data and methodological layers overlap, Table 2 summarizes the correspondence between each of the research questions, the type of research instrument, and the measured variables of each.

Table 2. Alignment of research questions, instruments, and measurable variables

Research Question	Instrument(s)	Measurable Variable(s)	Data Type
Types of pragmatic inconsistencies	TVJT; acceptability task	Truth-value accuracy; acceptability ratings (1-5)	Quantitative
Role of contextual cues	Narrative manipulation; open-ended responses; eye-tracking	Acceptability shifts across contexts; fixation duration on contextual cues	Mixed
Reconciliation strategies	Response-time task; eye-tracking; post-test reflections	RT latency; regressions; revision strategies	Mixed

Data analysis

The truth-value judgments and acceptability ratings quantitative data were analyzed in a descriptive and inferential manner in order to study the change in the performance before and after the test. The data on response time were treated under normal psycholinguistic protocols by dropping responses that fell below 200 ms response times, and that had a standard deviation that was more than 2.5 standard deviations from the means of respondents. The data from the eye tracking was processed in terms of fixation-based indicators (first fixation time, cumulative dwell time, and regressions) on the contextually relevant areas. Open-ended questionnaires were thematically coded to give qualitative responses that were used to identify reconciliation strategies. The research questions were addressed through triangulation of behavioral, temporal, gaze-based and qualitative data to answer the research questions comprehensively.

Ethical considerations

The research was carried out in compliance with the institutional ethical guidelines. Informed consent was given by all the respondents, being informed of the purpose of the study, procedures and their right to withdraw without following any protocols at any time. The data were kept safely in institutional servers with a password that was only available to the researcher, to ensure confidentiality.

Findings and Discussion

Findings

The findings are presented in relation to the three research questions, integrating behavioral judgments, response-time measures, eye-tracking data, and qualitative reflections. Together, these results illustrate how respondents identified

pragmatic inconsistencies, utilized contextual cues, and reconciled conflicts between literal meaning and scalar implicature.

Table 3. Warm-up trials

Warm up narratives		
Respondents	The Hungry Puppies (Clearly True)	The Picnic Trouble (Clearly False)
R1	A	NA
R2	A	NA
R3	A	NA
R4	A	NA
R5	A	NA
R6	A	NA
R7	A	NA
R8	A	NA
R9	A	NA
R10	A	NA

Note: 'A' stands for appropriate and 'NA' for not appropriate.

Table 3 displays all ten respondents who rated the Hungry Puppies narrative as the one that makes sense correctly (apparently true), but in agreement rated the Picnic Trouble narrative as not making sense correctly (apparently false), which confirms that there is uniform understanding and that there is a large improvement in pragmatic evaluation. The ten responders all judged The Hungry Puppies (an obviously true statement) as appropriate, demonstrating baseline sensitivity to literal truth. All also judged The Picnic Trouble (an obviously false statement) as inappropriate, demonstrating that they were able to detect pragmatic inappropriateness. These findings ensure that the subjects began the main experiment with a satisfactory grasp of literal-pragmatic distinctions, attesting to the validity of their later judgments.

Table 4. Filler statements

Respondents	Filler Name				
	The rabbit	The lion	The penguin	The squirrel	The monkey
R1	True	True	False	False	False
R2	True	True	False	False	False
R3	True	True	False	False	False
R4	True	True	False	False	False
R5	True	True	False	False	False
R6	True	True	False	False	False
R7	True	True	False	False	False
R8	True	True	False	False	False
R9	True	True	False	False	False
R10	True	True	False	False	False

Table 4 recapitulates truth-value judgments by subjects on five filler statements that were included to sustain interest and block surmising. The rabbit and the lion statements were both classified as true by all ten subjects, and all of

them consistently judged The penguin, The squirrel, and The monkey statements as false. Response consistency of this sort attests to high levels of attention and homogeneous interpretation of simple literal material. The consistent accuracy supports the validity of their responses to the critical scalar implicature questions in the main experimental task.

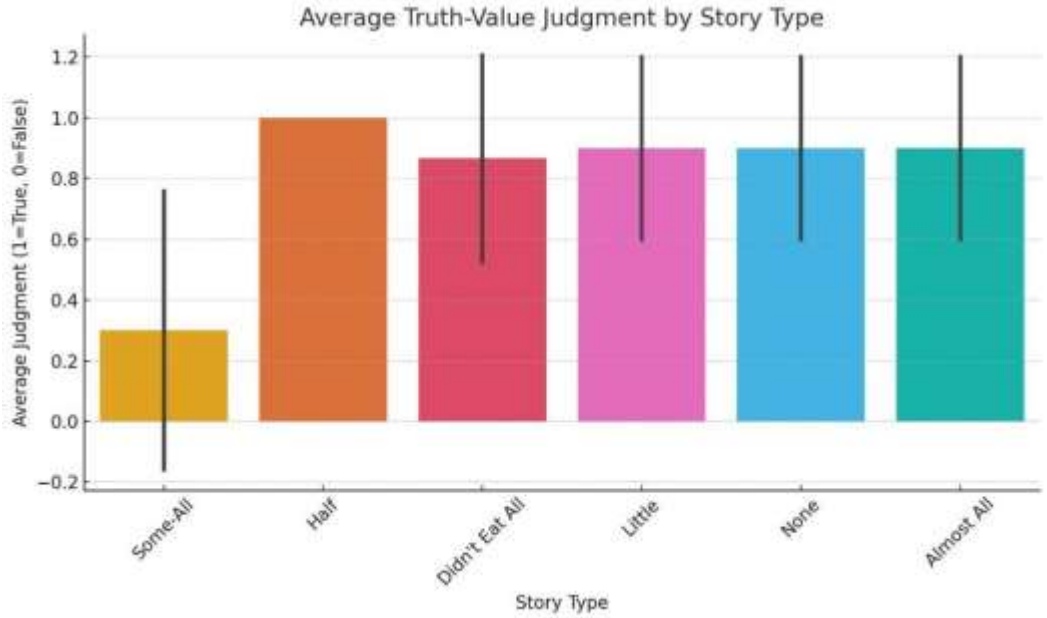

Figure 1. Respondents' average truth value judgement

Figure 1 presents crucial information about respondents' pragmatic comprehension of scalar implicatures for 15-story stimuli. It illustrates how respondents systematically judged scalar words such as "some" as false when the visual context clearly conveyed "all", showing an understanding of pragmatic inconsistency. This trend, most clear in "Some-All" stories, speaks directly to Research Question 1 and demonstrates how scalar understatement interferes with comprehension when stronger alternatives are available visually. Conversely, response types "Half", "Didn't Eat All," and "None" received high truth-value marks, confirming the contribution of contextual visual information in facilitating accurate implicature interpretation (contextual cues). The observation that variation in "Some-All" responses also captured variation in resolving literal-pragmatic conflicts accounts for resolution of conflicts between literal meanings and pragmatic interpretation. These observations confirm the delicate interplay between visual evidence and inference processes in scalar implicature interpretation.

Pre-test

Scalar implicature comprehension

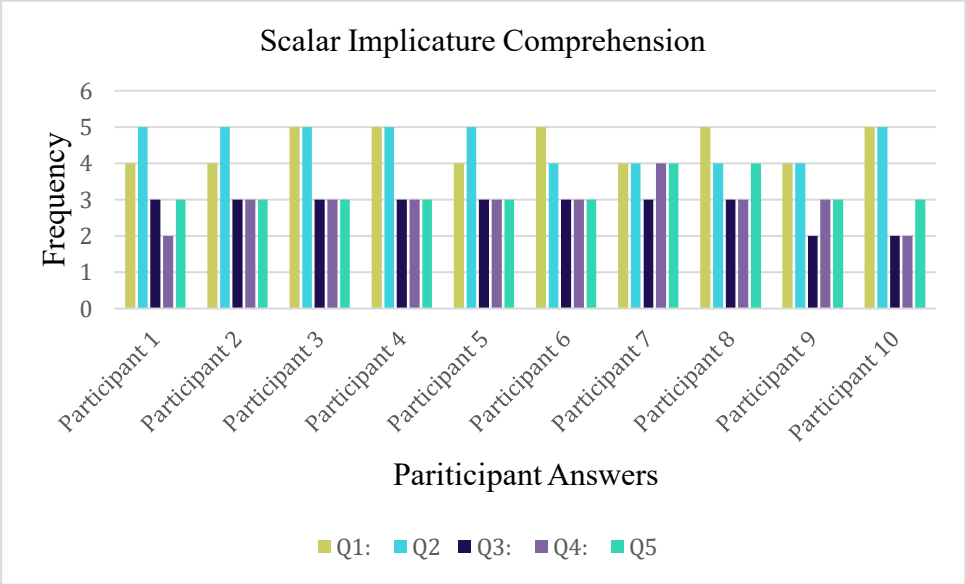

Figure 2. Pre-test responses on scalar implicature comprehension

Pre-test answers reflect a consistent trend of pre-test understanding of scalar implicatures (Figure 2) and sensitivity to pragmatics. Respondents typically reported having a clear understanding of "some" and "all" (Q1: M = 4.5), and agreeing that "Some always means not all" (Q2: M = 4.6) captures a direction of implicative understanding of "some". But Question 5 uses (M = 3.2) to suggest a more conservative stance in real inferential application, suggesting skepticism or inconsistency in applying implicatures in use. They were struggling considerably with the acceptance of pragmatically incorrect but logically true sentences (Q3: M = 2.8), an excellent marker of a lack of pragmatic awareness. It is complementary to Question 4 (M = 3.0), meaning that the majority of respondents are not necessarily context-bound when deciding meaning, but rather lowly sensitive towards pragmatic contradiction. These results directly address respondents' baseline ability to know scalar implicatures and to pick up on pragmatic incongruity. Declarative scalar knowledge is sufficient but under-supported by inferential and contextual processing. The results confirm that the intervention targets are the amplification of contextual cue awareness and pragmatic incongruity awareness. The step-wise drop from explicit scalar knowledge to inferential application mirrors the very central hypothesis: scalar implicatures are not necessarily achieved independent of contextual support.

Contextual cue awareness

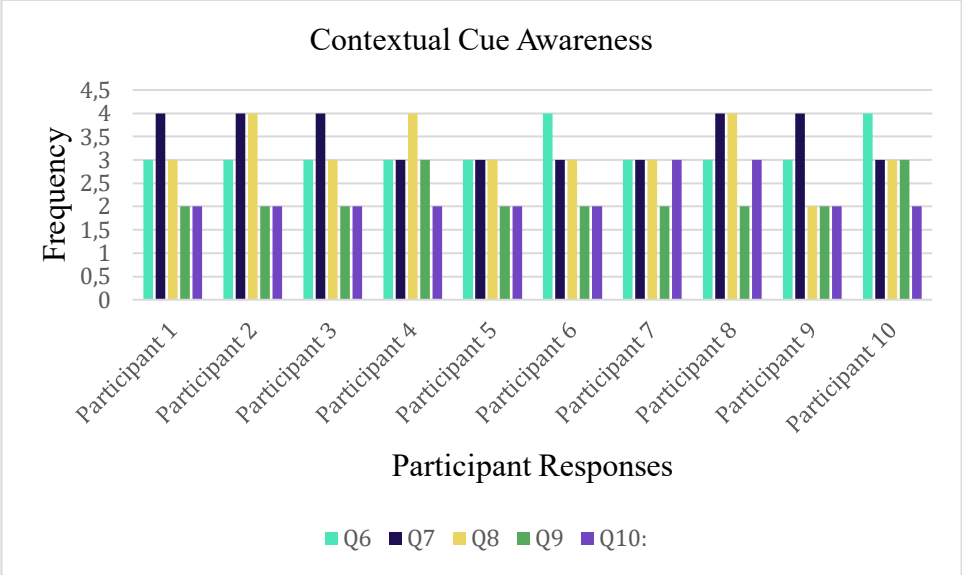

Figure 3. Pre-test responses on contextual cue awareness

Pre-test awareness of context cue sensitivity for context language that is non-literal and subtle is indicative of respondents' insensitivity to subtle and non-literal context language. On all five questions, overall sensitivity to context cues, but not consistently applied or ensured, is evidenced by the mean ratings (Figure 3). Respondents moderately concurred that they pay attention when speech differs from context (Q6: M = 3.2), indicating surface-level pragmatic discrepancy sensitivity. Equally, partial rather than strong sensitivity to visual information (Q7: M = 3.5) and voice tone (Q8: M = 3.2) both suggest partial but not full awareness of the extra-linguistic cues relevant to meaning. It is ironic, this awareness was not followed by assured interpretation; respondents found it most difficult to judge false claims (Q9: M = 2.2) and irony or lying (Q10: M = 2.2), both crucial for pragmatic anomaly and implicature detection. These results instantiate the study's questions by giving a baseline against which respondents have only moderately high contextual cue awareness and poorer inferential and evaluative skills. This explains the need for specific interventions to improve pragmatic understanding. The systematic accuracy deterioration between the registration of surface cues and processing fine-grained intentions supports the prediction that pragmatic inconsistency, especially with scalar implicatures, is not effectively understood without teaching contextual interpretation.

Understanding quantifiers and pragmatics

The analysis of Section 4 concludes that although the conceptual knowledge of the scalar terms like "some" and "all" is adequate among respondents, their pragmatic capacity to distinguish contextually infelicitous but logically true sentences is yet to be developed. Such a result is appropriate to the research questions of the present study concerning scalar implicature interpretation and the contribution of contextual information in the resolution of the incongruity of pragmatics. In Question 11, respondents described fine differences between "some" and "all". Respondent 1 said, "'Some' *means a subset or part. It allows for*

exceptions", whereas Respondent 3 said, "*'All' is 100%, the whole set. 'Some' means a number less than 100% but more than zero".* Respondent 5 put this more at length, saying, "'*Some' means a subset or part of a group. 'All' means all members. It's the distinction between a partial truth or general statement and an absolute, irrefutable truth*". These remarks suggest that respondents do have some intimation of the inferential weight scalar terms can bear, which answers the first research question about the kinds of pragmatic inconsistencies in scalar interpretation. However, this implies scalar awareness of meaning; it is not always accompanied by an equivalent recognition of contextual infelicities in natural conversation.

Question 12 provided more pragmatic richness, which signalled respondents awareness of the fact that literal truth can be misleading. Respondent 4 described as follows, "*My brother said he 'cleaned his room'... but the bed was a mountain of clothes*", and this provides an example of a common pragmatic mismatch. In the same vein, Respondent 6 reported, "*A job recruiter said, 'Our company pays competitive salaries'... true technically for the senior position, but deceptive for my junior position*". Such observations show increased sensitivity to disconnections between what one actually says and what pragmatically discloses itself, in support of the second and third research questions regarding contextual cue influence and reconciliation. Nonetheless, the illustrations are anecdotal and backward-looking. The test is whether subjects can reliably pick up on such mismatches in doing controlled experimental tasks. Pre-test replies, therefore, only reflect growing understanding and are worthy of the study's intention in refining subjects' skill at determining and resolving pragmatic inconsistency based on context cues in the understanding of scalar implicature.

Post-test

Scalar implicature comprehension

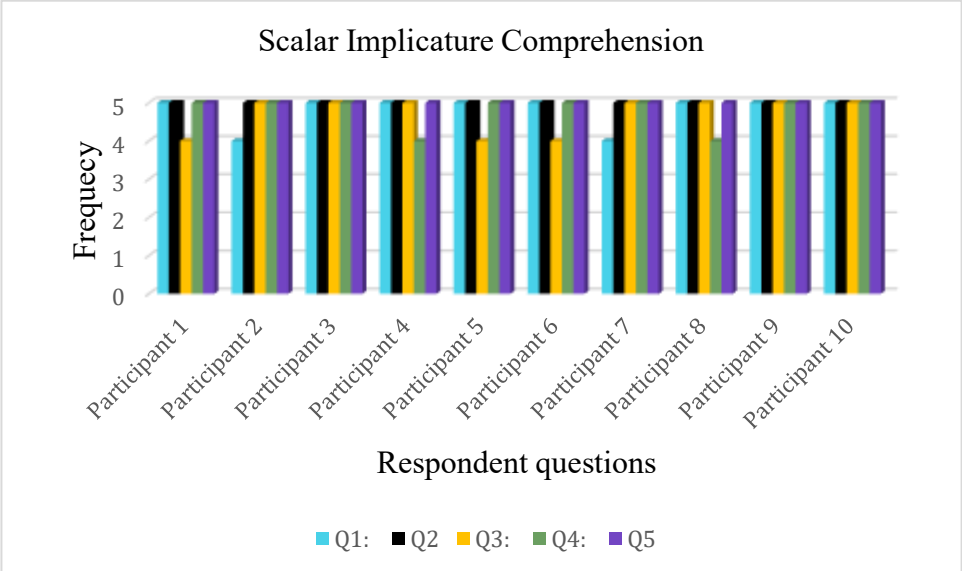

Figure 4. Post-test responses on scalar implicature comprehension

The post-test scores demonstrate a clear difference in the understanding of scalar implicature among respondents after the intervention. Throughout the five questions (Q1–Q5), all the responses of the respondents have high levels of

agreement (Figure 4), with most of the ratings at 5, indicating high confidence in differentiating between scalar words and their proper interpretation within context. In Q1 ("I understand the difference between 'some' and 'all'"), nine of the respondents scored 5 and one scored 4, indicating that respondents now have a clear and confident understanding of scalar contrasts. This is an improved semantic and pragmatic understanding, particularly associated with the first research question regarding how scalar implicature is interpreted. In Q2 ("'Some' always means 'not all'"), all the respondents marked the highest score, which shows that they not only understand the implicature of "some" but also internalize its default inference pattern. This also indicates, however, a possible overgeneralization of the scalar implicature, which can invite caution in making default assumptions when out of context.

Students performed well on Q3 ("I can tell when a sentence is logically true but pragmatically odd"), showing a greater ability to identify pragmatic mismatches, a primary goal of the study and the second research question regarding the impact of contextual cues. Q4 and Q5 also post quasi-universal scores of 5, reflecting enhanced inferential capacities and increased sensitivity to contextual cues restricting pragmatic interpretation. These findings corroborate the third research question, validating the intervention as effective in reinforcing the respondents' means for disambiguating literal and implied meaning contradictions. Generally, the findings demonstrate that systematic exposure to contextually dense, implicature-dense materials improved the pragmatic proficiency of the respondents, especially in identifying and interpreting scalar incongruities.

Contextual cue awareness

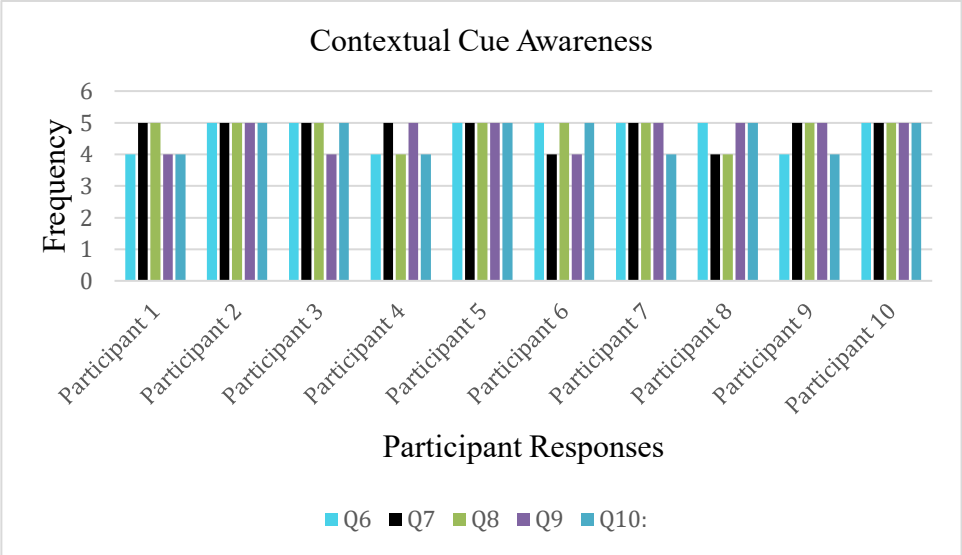

Figure 5: Post-test responses on contextual cue awareness

Section 3 post-test answers show a dramatic improvement in respondents' performance in identifying and utilizing contextual cues in pragmatic interpretation (Figure 5), echoing the second and third research questions of context impact and pragmatic inconsistency resolution. For Q6 ("I notice when something someone says doesn't fit the situation"), subjects rated themselves 4 or 5 most of the time (M = 4.7), reflecting an enhanced sensitivity to discrepant comments. This is up from

the pre-test when awareness was more superficial. Q7 and Q8, both questions of visual content and tone of voice, respectively, all carried a rating of 5, meaning that subjects no longer view non-verbal and prosodic signals as peripheral to marking implicated meaning. This provides evidence for the study's contention that multimodal context—linguistic, visual, prosodic—modulates the processing of scalar implicature. Q9 ("I am comfortable saying that a statement is misleading or inappropriate") and Q10 ("I am comfortable saying that someone is or is not saying something ironic or not entirely truthful") both demonstrate strong agreement (predominantly 5s) and reflect respondents' greater capacity for detecting subtle pragmatic inconsistency, an ability far weaker in the pre-test. Overall consistency and improvement in scores indicate that experimental narrative exposure and scalar inconsistency exposure with the study intervention were successful in transferring the interpretive mechanisms necessary for the resolution of scalar implicatures and literal and non-literal conflict. These improvements confirm the centrality of contextual cue perception in resolving scalar implicatures and pragmatic conflict, thus validating the research goals and study design.

Understanding quantifiers and pragmatics

Post-test results show a high level of improvement in both pragmatic sensibility and theoretical correctness among the test-takers, which directly aligns with all three research questions, more specifically, those addressing how users of language negotiate literal and implied meaning through contextual input and pragmatic sensibility. For Question 11, all the subjects showed more sensitivity to scalar terms, particularly to the implicature carried by some. Respondent 1 responded, "'Some' is in a group. 'All' means all members," which clearly marked the difference between partial and complete inclusion. Respondent 4 targeted pragmatic inference: "'Some' typically carries the implicature of 'not all.' This contrast precludes ambiguity." "Now that I know about scalar implicature," Respondent 8 went on, "I hear how 'some' implicates 'not all,' although it's not logically entailed." These responses illustrate not only definitional accuracy but also attention to inference-based meaning underlying scalar implicature, a main interest of the study's initial research question. More informative are responses to Question 12, which probes daily sensitivity to pragmatic inconsistency. Students came up with good examples of technically correct but misleading sentences, central to the second and third research questions.

Respondent 2 remembered, "My friend said, 'I didn't eat the last piece of cake'. He gave it to someone else." The literal meaning didn't match the effect. Respondent 6 said, "She said she had studied but had only glanced over chapter one, which wasn't on the test." These indicate a sophisticated skill to recognize the pragmatic mismatch between surface reality and implicated meaning. Respondent 8 also perceptively noted, "His words were literally neutral, but everything about how he said it told me otherwise," with an enhanced understanding of non-verbal and contextual data, precisely as expected for the second research question. At the same time, Respondent 10 said, "He let it ring once and hung up. It sounded sincere but wasn't," showing that she was able to judge the speaker's intention independent of literal meaning. Together, these answers affirm that respondents acquired and internalized what was presented during the intervention. Their acquired metapragmatic awareness and ability to distinguish and interpret scalar implicatures

in nuanced, context-dependent manners validate the study design and research questions.

Discussion

The current study determined the role of explicit training on the use of multimodal contextual cues in computing and repairing scalar implicatures among L2 learners under conditions of pragmatic contradiction, with respect to studying the interpretation of part of not all. Although many studies of scalar implicature have been conducted in relation to native-speaker processing and language development in children (Bott & Noveck, 2004; Noveck & Sperber, 2007), very little has been done to study how learners with minimal pragmatic training resolve literal truth and contextual contradiction, especially in multimodal contexts. The study of the Telugu-speaking undergraduates before and after a specific intervention helps to put the debate on default and contextual accounts of implicature in its perspective, and places scalar inference squarely in the context of interlanguage pragmatics.

Simultaneously, it should be remembered that these findings need to be placed in the larger empirical environment that encompasses competing evidence. Some of the studies have found quite strong scalar implicatures even under reduced or minimally supportive conditions, which has led to the suggestion that a certain number of implicatures are fast or automatic, particularly when they are produced by native speakers (Breheny et al., 2006; Levinson, 2000; Spychalska et al., 2021). The difference between the results and the current findings can be plausibly explained by the variation in terms of the type of task performed, the population of the respondents, the modality, as well as the language background. Quickly accessible versions of alternative generation are typical of sentence-based tasks and priming paradigms, but reflective appraisal of pragmatic appropriateness of Truth-Value Judgment Tasks using narratives (Degen & Tanenhaus, 2015). In addition, L2 learners are also characterized by less automaticity in pragmatic processing and more dependence on surface semantics, especially when the pragmatic knowledge has not been taught explicitly (Kecskés, 2022; Mognon et al., 2025). Therefore, the current results cannot be understood as a rejection of default-based evidence in general, but they can explain the diversity of implicature computation among people and communicative situations.

More importantly, the current findings should also be explained in terms of interlanguage pragmatics. The case of Telugu-speaking learners is an example of a linguistically and pragmatically different group whose L1 represents quantity, emphasis and informativeness in a manner that does not necessarily translate directly to English scalar expressions. Previous studies have indicated that L2 pragmatic behaviour is not only an indicator of general cognitive limitations, but also transfer to L1, lack of exposure to target-language pragmatic markers, and instructional backgrounds that emphasize grammatical correctness, as opposed to pragmatic inferencing (Haselow, 2021; Kasper & Rose, 2002). The pre-test disposition of the respondents to accept literally true statements which are pragmatically infelicitous can thus be seen rather as a coincidence between L2 processing demands, lack of metapragmatic awareness and L1-informed expectations, than as a property of the members of the so-called listeners in general

Pragmatic inconsistencies that disrupt expected scalar inferences and conflicts between literal meanings and pragmatic interpretations

As far as pragmatic inconsistencies are concerned, the trend is evident. Some of the students who passed were commonly accepted by the respondents before the intervention in situations where the visual evidence was used to automatically show that they all passed, meaning that their ability to detect pragmatic inconsistency was not easy. The post-train respondents were also reliable in rejecting these mismatches and of pragmatic inappropriateness. Notably, the section has the advantage of distinguishing what the subjects did and what the theory predicts. Descriptively, the learners started giving more importance to literal truth conditions rather than pragmatic appropriateness. Theoretically, this trend is only somewhat consistent with defaultist descriptions. This would be anticipated by not all generalized conversational implicatures that Levinson (2000) has proposed, who further suggests that the generalized implicatures should be inferred routinely in the face of no explicit contextual support, even though some would be referred to. Nevertheless, the inability to identify pragmatic anomalies at pre-test is evidence of weaknesses in strong defaultism, according to which implicatures are not calculated because it is an ongoing process and requires situational relevance and memory (Degen & Tanenhaus, 2015; Starr & Destruel, 2025). The post-test change, on its part, justifies contextualist and relevance-based theories, as per which implicature develops in instances where contextual indication leads the informative purposes of the speaker to be made apparent (Sperber & Wilson, 2002).

However, the current results do not justify the rejection of the default-based mechanisms. The hybrid models assume that default activations of scalar implicatures can be weakened, and these weakened activations need to be reinforced or strengthened through contextual means (Breheny et al., 2006; Khorsheed & Gotzner, 2023). In this view, the resultant pre-test behavior indicates low default activation, which falls short of taking precedence over literal truth in the absence of salient cues, especially when there are constraints of L2 processing. Pragmatic inconsistency thus does not indicate a lack of semantic proficiency but demonstrates the dynamism of default expectation negotiation, contextual enhancement, and cognitive effort (Eragamreddy, 2025).

The role of contextual cues in scalar implicature comprehension

Results about contextual cues indicate that the availability of situational signals: visual, situational, and prosodic, was related to significant enhancement in scalar implicature comprehension. Respondents were more sensitive to linguistic form and contextual evidence mismatches after the intervention, which is consistent with the previous studies that indicate that contextual enrichment reduces inferential cost and promotes the derivation of implicature (Khorsheed et al., 2022; Spychalska et al., 2021). Nevertheless, suggestions that environmental triggers play a leading role should be conditional. The current experiment failed to present a unimodal control condition, and, consequently, is not capable of isolating the special input on multimodality as compared to the language context alone. Instead of primacy of causation, the results indicate that multimodal cues promote and enhance pragmatic interpretation through the effects of salience and attention capture (Degen & Tanenhaus, 2015; Kecskés, 2022). Eye-tracking data behavior shows that individuals were more fixated on context-relevant areas, appearing to

indicate that the learners were taught where to find pragmatic information; however, individual variations warn against generalized effects. In that regard, the findings are consistent with relevance-theoretic expectations that comprehension is a matter of optimal relevance attainment achieved by means of assimilating available cues (Sperber & Wilson, 2002), but still do not contradict defaultist opinions that implicatures can be produced yet cancelled in cases where there is a lack of support in the context (Levinson, 2000). Multimodal context, in turn, does not substitute inference mechanisms but supports them.

Reconciling inconsistencies between literal and pragmatic meanings

The third research question was about the conflict between literal truth and pragmatic meaning, which is resolved by learners. The post-test results show that there is more confidence in rejection of pragmatically infelicitous statements, less response time, gaze patterns that indicate less processing difficulty, and more explicit metapragmatic explanations. These results are consistent with the existing evidence that implicature derivation is highly cognitively taxing, and it is regularly poorer than literal interpretation, particularly in L2 contexts (Ayupova, 2025; Bott & Noveck, 2004). Simultaneously, there should also be the recognition of inferential limits. It was deduced on the basis of behavioral estimates, interval estimates and hindsight explanations, as opposed to being observed as an ongoing inferential process. Although the response-time decreases and fixation reallocations imply more efficient integrations of the cues, they may not reflect the dynamics of inference revision at the moment (Spychalska et al., 2021). Therefore, reconciliation is to be construed as an adaptive phenomenon as opposed to a cognitive mechanism perceived directly. However, the results are consistent with the reports that the conceptualization of the implicature resolution is graded and revisable, influenced by the alternatives of the semantics, contextual restrictions, and intentions of the speaker (Eragamreddy, 2025; Haselow, 2021). Notably, the findings suggest that L2 learners can use such adaptive reasoning when explicit contextual support is provided, which supports the argument that pragmatic competence can be learned as opposed to being inherent.

The combination of the discussion together favors a probabilistic, hybrid account of the processing of scalar implicature that can accommodate default tendencies, contextual modulation, and L2-specific limitations. The results highlight the significance of multimodal input in L2 pragmatic teaching, but not to overgeneralize the research to another design and population. Further studies ought to take into account control conditions, various L1 groups, and more time-course-resolution studies in order to further clarify the pragmatic inference process that runs in real time across languages.

Conclusion

The current study examined the interpretation of scalar implicature among the Telugu-speaking undergraduate students in reference to three essential questions. To begin with, on pragmatic inconsistencies (pragmatic inconsistencies), pre-test findings indicated that although conceptually, respondents were able to gain insight into the meaning of such scalar words as “some” and “all”, they experienced challenges in identifying logically true but contextually infelicitous utterances. The performance at the end of the intervention was significantly better, which proves

that controlled contextual training resulted in the execution of scalar inconsistencies sensitization in learners. Second, on contextual cues (contextual cues), the results established that visual, prosodic and situational cues played a crucial role in comprehending scalar implicature significantly. These multimodal cues were progressively employed by the respondents to read between the lines to prove the significance of context in pragmatic comprehension. Third, to reconcile literal-pragmatic differences (resolution of conflicts between literal meanings and pragmatic interpretations), respondents used the literal bias to make elaborate inferences by incorporating contextual information to settle discrepancies between what was said and what was intended. This validates the fact that pragmatic competence emerges as a result of dynamic contextual thinking as opposed to semantic knowledge.

The present research has shown that when there is an interaction between literal defaults and context-dependent reasoning, pragmatic inconsistency of scalar implicatures arises, rather than as a result of a lexical misunderstanding. In addition to revisiting the different findings, the results add to the existing debates between the defaultist and contextualist sides of the argument, as demonstrated by the study findings that multimodal cues, such as visual, prosodic, and situational, do not simply aid in the process of understanding; they actually recalibrate the process of inferential strategies. Such evidence aligns with hybrid probabilistic models, which propose that the negotiation of meaning is performed by learners as the dynamic process of weighing weak default inferences at the expense of contextual enrichment. Through this, the research will contribute to a more integrated explanation of how scalar implicature is processed that bridges across theoretical gaps.

The limitations of this study can most certainly be seen as a natural part of its exploratory nature, as opposed to its weaknesses that should be minimized. The sample was quite homogeneous (a small group of 10 Telugu-speaking undergraduates) as internal validity was aimed to be achieved, and confounding linguistic variation was taken care of. But this strength, in turn, is the limitation of the extrapolation of the results to the wider L2 population. Likewise, the lack of a control group, although limited causal inference, is indicative of the preliminary and developmental nature of the study that valued ecological validity by using narrative-based interventions. The use of self-report measures also creates the possibility of bias, but they provide useful information about the metapragmatics of learners that cannot be entirely assessed with the help of behavioural measures. Lastly, the short-term treatment is unable to establish the permanence of the pragmatic awareness gains, but such a weakness is part of a pilot study meant to conduct tests of initial viability and responsiveness. This study has created a significant base point by carefully narrowing down its scope, which will give an ample starting point to future studies, which will be further comprehensive and diverse, as well as longitudinal studies.

To enhance its applicability, future research should use larger, more heterogeneous samples, randomized control groups, as well as behavioral or neurocognitive levels, including eye-tracking and ERP, to authenticate real-time processing. It would be interesting to investigate the finer implications of implicatures (e.g., irony or metaphor), and long-term or high-fidelity virtual worlds would be intriguing to study retention. L2 teaching should be guided pedagogically

by activities that combine multimodal and context-rich activities to develop pragmatic sensitivity on the part of learners, and the language testing should be done to measure pragmatic inference in real communicative contexts. In the case of AI and NLP, context-sensitive processing models may be embedded that provide systems with improved capacity to deal with scalar implicatures and pragmatic mismatches between computation and human communication models.

Acknowledgements

The authors would like to thank all the respondents and the academic lecturer whose efforts in gathering data by use of structured questionnaires helped to improve the validity and quality of this study. The top researchers in pragmatics are also thanked, who strictly tested the stimuli and methods and ensured that they are reliable and methodologically sound. They were incredibly helpful to this study because of their experience and positive feedback.

Competing Interests

The authors have no competing interests. The research was done independently, and there are no financial or other relationships that may be used to influence the interpretation or presentation of the results.

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