

**Research Article**

A Study of the Conceptual Basis and Inferential Model of the Question and Answer Cold Jokes

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ABSTRACT

Question and answer cold joke (QACJ) is a language phenomenon with particular formal, semantic, and pragmatic features. Its existing analytical mode remains relatively simple, and rarely involves its inferential basis and implicature inferring. The current study aimed to dig out its inferential model based on its conceptual basis under a comprehensive perspective. The particular formal and semantic features of the QACJ have laid the foundation for its four conceptual bases (i.e., intersected question and answer form, indirectly correlated logic, garden-path inferring, cold but humorous effect). Guided by an integrated analytical framework, its forward and backward inferring models based on its conceptual bases have been proposed. The garden-path relevance inferring mechanisms are the red-light and the crossroad mechanisms, both relating to the presupposition entailing optimal-relevance verification, and context shifting, all aiming at a phase in cold humor effect.

1. Introduction

With the advent of a new century, language has come into the post-modernism era. The timely characteristics, such as diversification, decentration, and more emphasis on inter-subjectivity, greatly improve people's ability to create, use and popularize language. Thus, the modern language forms present a situation in which flowers fully bloom. Cold joke is just the new product of post-modernism. The cold jokes have now spread over the daily spoken language, Bulletin Board System (BBS) forums, we-media platform, comedy films and TV works, folk cold joke collection, and some literature on humor.

Hong (2019) summarized the definition of a cold joke as a joke which is unconventionally logical and not compatible with facts using rhetorical devices, phonograms, polysemys. He further divides cold jokes into the narration cold jokes (NCJs) and the question and answer cold jokes (QACJs) regarding textual style. In NCJ, the speaker/narrator himself creates humor. The implicature and punchline can be easily inferred. However, in QACJs, the complicated semantic structure, rich connotation, and superior inferring difficulty. In this QACJ, the speaker proposes a confusing question,

while the hearer can not get the speaker's intention. To promote communication, the speaker gives the correct answer with numerical counting, which does not correspond to the question. His response is decontextualized and confusing, resulting in implicature production and awkward silence or coldness. It is, therefore, obvious that humorous language phenomena, such as the QACJ with such particular form and meaning as well as great inferring difficulty, have significant research values. Analysis of its implicature production and inferring can be beneficial to explore its operation mechanism and to know its essence.

The QACJs belong to "conversational humor" (Coates, 2007, p. 29). Previous studies on QACJs mainly cover three aspects. The first aspect relates to considering the distinctive features of QACJ. Boxer and Cortés-Conde (1997) point out its functions of society controlling, identity displaying, and relation affirming. Norrik (1993, 2003), Long and Graesser (1998), and Dynel (2009) have discussed the differences between QACJs and common rhetorical forms, such as irony, pun, teasing, mocking and

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between common rhetorical questions, statements, and word games. According to Demjén (2018), QACJ has versatility, multifaceted, and heterogeneity features. The second array of research addresses QACJ formation mechanism. Zhu (2002) notes that it has the promotion and degradation of preset psychological mechanisms. Wang and Lu (2014) analyzed its coldness-producing mechanism through a psychological experiment. Shan and Xiao (2014) start from the perspective of frame semantics. They note that such a kind of humor results from the frame shift, i.e., the senses of some particular word used by the interlocuters to rely on two different frames, which will cause semantic-logic conflict in the same context. The third phase involves QACJ pragmatic features. Boxer and Cortés-Conde(1997) state that identity construction can be done based on the interlocuters' biting or bonding relation. Fang and Wang (2009) point out two producing patterns for humorous effects, i.e., making use of the fuzziness of language itself and the pragmatic fuzziness of the speaker. The studies above have shown part of QACJ nature, function, pragmatic characteristics, and mechanism of humor generation, but the conceptual basis of its generation has not been systematically explored based on its form, semantics, and pragmatic characteristics. They also fail to explore the inferring problems of its conversational implicature based on its conceptual basis.

Conversational implicature refers to the non-explicit true meaning in the actual context, which is an important issue of meaning conducting theory (Grice, 1975). The core contents of its classical theory mainly relate to conversational implicature. Concretely, the conversational implicature can be divided further into general conversational implicature and particular conversational implicature. Both the general conversational implicature and particular conversational implicature can be nonconventional, predictable, and indistinguishable. Additionally, both their inferring rely on the compliance or violation of the cooperative principle and its maxims. Later, some scholars gradually founded the neo-Gricean school based on classical theory. For instance, Horn (1984) holds that the conversational implicature has scalars. Sperber and Wilson (1986) note that the cooperative principle and its maxims have been replaced by the relation principle and cognitive principle. Levinson (2000) states that the scaled conversational implicature can be inferred depending on the Q-Principle, I-Principle, R-Principle. After that, the traditional principle-oriented inference model was changed, and the conversational implicature was inferred from conventional and causal implication relations. The inferring of conversational implicature usually starts from the meaning but ignores the impact on meaning by the form structure. Thus, Sun (2021) proposes the formal engagement between utterances derivation model for the conversational implicature under the guide of the Dialogic Syntactic Theory, that is, formal engagement>parallelism and mapping>resonance of form and meaning>analogy>conversational implicature. However, her model is still limited to the interface study between

syntax and semantics, but ignores the contextual sensitivity of communication. Besides, the conversational implicature theory mainly focuses on the description of linguistic characteristics and the explanation of the surface mechanism of humorous discourse, while for those humorous utterances with particular forms and high comprehension difficulty, it is insufficient to explain.

Therefore, QACJ has been taken as the research subject and mainly discusses two issues under the guidance of some related pragmatic theories: What is the conceptual basis of QACJ? How does the conceptual basis promote the inferring of QACJ's implicature? Considering the particularity of the corpus, following the principles of universality, representativeness, and typicality, this paper delves a deep exploration of QACJs.

2. Conceptual basis of question and answer cold jokes

The conceptual basis of linguistic expressions should consider its formal and semantic features and pragmatic attributes. The former relates to the phonetic features, lexical structure, syntactic environment, semantic relations, semantic structure, and semantic transparency. The latter relates to the pragmatic strategy, pragmatic inferring, and pragmatic effects. Based on the conceptual basis, the QACJ can be defined more comprehensively. The generation and understanding process of QACJ is also a successful communicative process, and a form-meaning pair beyond the sentence level. The form of question and answer, or serial question and answer interaction, will lead to the suspense intertwined, and the communication is carried out step by step. Thus, it will give the audience the perception of "talk back". Questions or answers often contain rich implicit information and high pragmatic effects. The implicature's existence directly leads to its semantic transparency, which is the ad hoc use and can be inferred.

2.1. Inter-connectionality and stratificationality of form

At the form level, the QACJ often takes the "question + answer" form, or to satisfy some special communicative needs like for the progressive suspense, the "question 1+answer 1+question 2+answer 2", and even the snowball form will also be used, which shows the characteristics of inter-connectionality and stratificationality. The logic between the question and the answer is indirectly related through the interaction of the communicators in the communication, and it is driven by some strategies at the levels of phonetic, lexical, syntax and also some context operations.

Consider the following example:

(1) Speaker: Why is six afraid of seven?

Hearer: I don't know. Why?

Speaker: Because seven, eight, nine.

Example (1) is a QACJ, which is structured with the "question-answer+question-answer" form, and the implicature dissociates in it. The speaker first proposes the

confusing question, then the hearer answers with "I don't know"; to get the correct answer, the hearer gives another question "why?"; then, the speaker provides the trigger information endowed with the implicature, resulting in awkward silence or communication coldness. Communication continues, and the hearer's background information about the homophonic relation between "eight" and "ate", as well as the personification use of numbers' fear emotion has been activated through the speaker's trigger information. The hearer begins to infer his implicature; since the number "seven" ate its neighbor "nine", its other neighbor "six" will also be eaten, so "six" is afraid of "seven". Up to now, the true meaning has emerged, and the humor is achieved. The implied information of the speaker is presented with ups and downs in the form of a series of questions and answers between the communication interlocutors, and their indirect relation has also been realized. Thus, the entire communication is progressed in the way of interspersed and step by step.

2.2. Ad hoc meaning can be calculable

Homophone, disambiguation/word, lexical ambiguity, syntactic ambiguity, concept diversion, and presupposition ambiguity all will lead to the variation of the form of QACJ and the generation of some implicit information. When the audience can not quickly obtain his intended meaning, the understanding is blocked, and the QACJ's semantic transparency is quite low at the same time. In order to continue the communication, the interlocutors will give some trigger information through some particular strategies in the form of some nonconventional answers, which have an indirect and far-fetched relation with the question, which will lead to the entire QACJ's ad hoc meaning.

(2) Question: Why are you late for school this morning?

Answer: Someone lost one dollar!

Question: Is that you who helped him find the money?

Answer: No, I stood on the money until the person went away.

In example (2), firstly, the teacher proposes the question, and the student seems to have given a conventional answer, but his presupposition is uncertain, resulting in this QACJ's low semantic transparency. In order to get the real reason for being late for class, the teacher tries to give a conventional derivation; someone lost money > the student waited for the owner of the lost money in the place, so he lost time > the student was late for class. Then, the teacher proposes another question about whether his guess is right. Finally, the student answers, "being late for class is because of his intention to keep the money for himself so he stamps on the money". This communicative scene violates common sense and causes a cold silence, but the teacher can quickly understand the communicative intention of the student. The fuzziness of the presupposition information and the particularity of the communicative scene result in the QACJ whole meaning's emergence.

On the other hand, the existence of trigger information

presupposes the QACJ's semantic derivability. The derivation of the emerging meaning of the QACJ is mainly through eliminating its pragmatic purpose, illocutionary force, pragmatic presupposition, and the ambiguity of context.

(3) Speaker: Do you have a girlfriend?

Hearer: Yes, she is from another nation.

Speaker: Cool! Which nation?

Hearer: Imagination.

In example (3), it is just the emergence of the key trigger information that promotes the communicator to deduce the implied information. The speaker firstly proposes the question, "Do you have a girlfriend?". At the same time, the hearer gives a nonconventional answer irrelevant to the question, that is, "she is from another nation". The hearer's answer is quite confusing, so the speaker tries to continue the topic and proposes another question "Which nation?". Then, to complete the communication, the hearer gives the correct trigger information, which contains implied information, "Imagination". Finally, the speaker's background information about the far-fetched relation between "nation" and "imagination" can be activated to quickly infer what the hearer intends to imply and obtain the cold humor.

To sum up, it reveals that there are four conceptual bases for QACJ. First, the interlaced form of questions and answers, that is, the "one question + one answer" or the serial questions and answers with ordered turn-taking. Second, the indirectly related logic, that is, the logical correlation between the question and answer, is indirect and needs the help of some language or non-language strategies. Third, the garden-path derivation, that is, the derivation of its overall meaning does not follow common sense, but is carried out according to the criterion of desirability. Fourth, the cold but humorous language effect, that is, the audience will not laugh in the process of communication, but the humorous effect is still in. Thus, the QACJ can be defined as a kind of question-and-answer cold humor with high comprehension difficulty, which is produced by both communicators. This kind of humorous phenomenon is produced in the way that one partner of the communication temporarily implies his intention and also tries to motivate the other partner to enable the background knowledge to infer his conversational implicature in a garden-path way and finally obtain the humorous effects quickly. The multi-dimensional analysis of the conceptual basis of QACJ is beneficial to comprehensively excavating their conversational implicature and deducing the true meaning to be expressed.

3. Inferential model of the implicature in question and answer cold jokes

Conversational implicature theory (Grice, 1975), Pragmatic presupposition theory (Stalnaker, 1974), and relevance theory (Sperber & Wilson, 1985; 2006) are the three most common theories for humorous discourse analysis. Conversational implicature theory is a kind of

pragmatic inference theory, closely related to the cognitive background, current context, and individual mental state. It is a kind of dynamic mental integration of the interlocutors (Fan & Zhou, 2015). Apuduwaili et al. (2017) note that understanding implied information is also restricted by linguistic features, participants' intentions and expectations, social experience, and cultural conventions. Pragmatic presupposition theory is an implicature derivation theory and is also the shared knowledge structure of the interlocutors, which is activated by the key trigger information. Hou (2014) states that the skillful use of pragmatic presupposition, such as canceling, setting, and changing presupposition, is an important means to achieve efficient communication. Relevance theory emphasizes that language comprehension is a process of seeking relevance (Sperber & Wilson, 1986). Gibbs (2008) states that striving for optimal relevance in answering questions is to strive to maximize the cognitive effects and minimize the cognitive efforts. The garden-path derivation is a critical pragmatic derivation mechanism of the relevance theory, and it is divided into two types, namely, the red-light mechanism and the crossroad mechanism. The red-light mechanism refers to the communicators' need to wait for a presupposition trigger message (green light) to activate suspended communication when the comprehension is blocked, that is, encountered with the red or yellow light. The crossroad mechanism refers to the relevance verification required when there are different understanding modes or crossroads, meaning that individuals should change to another road when one road is blocked (Dynel, 2009). The QACJ is a kind of garden-path humor. It belongs to the general pragmatic garden-path phenomenon, with great derivation difficulties. Garden-path humor first appeared in a study by Dynel (2009), and the pragmatic garden-path phenomenon was introduced by Hou and Feng (2017). For such a language phenomenon, a comprehensive model of analysis and derivation is urgently needed. But even though the basic ideas of the above three theories are quite clear, their combination for the levels and analysis mechanism needs to be clarified.

Relying on QACJ's four conceptual bases above, its generation process can be combed out. Firstly, via the intervention of the question-and-answer form, especially the guiding effect of the whole communication from the question form, i.e., whether true or false, or being deliberately contrary to the intentions of the questioner via the answer form, and causing a confusing topic which leads to temporary communication interruption. Secondly, the implication in the questions and answers will lead to the opacification of its semantic structure and the difficulty in deriving its pragmatic meaning. The meaning derivation needs the implication provider to add the correct answer to activate the recipient's related background information, then to deduce the implied meaning in a garden-path way; or on the other hand, the recipient volunteer invokes his background information to acquire the implication provider's intention, ultimately resulting in the effect of silence and humor. Thus, a comprehensive analysis and

derivation model of the QACJ can be formalized as guidance of the formal structure (form) > non-cooperation of the conversation (pragmatics) > emergence of the meaning (semantics) > derivation of garden-path relevance > conversational implicature > humor effects.

The formation and understanding of QACJ's punchline is just the communication process to seek optimal relevance. The understanding of conversational implicature will go through the processes of implicature emergence, misunderstanding, correct answer addition, pragmatic derivation, and correct answer acquisition sequentially. The key to understanding the implicit meaning of utterance lies in resolving the conflict of comprehension and activating the optimal relevance between the question and the answerer's expectation using certain means in a specific context. In the evolution process of the QACJ, the generators usually initiate the communication with the implicit pragmatic ambiguity through a series of means, all of which lead to the online conversion of the pragmatic presuppositions. On the other hand, the receiver conducts online processing of the conversational implicature by means of presupposition, including cancellation, distortion, change, and imagining the presupposition. Verifying the optimal relevance is the backward derivation, that is, by trying to activate all possible connections to the other party's intention and context, then picking out the one with the best relevance. To sum up, referring to the comprehensive analysis and derivation mode of the QACJ, and based on the routines of its communication realization, namely, from who the implicit information provided, two inferential models of conversational implicature can be separated.

3.1. Progressive inferential model of the implicatures in question and answer cold jokes

The progressive inferring model of the implicatures in QACJs refers to the communication path in which the questioner provides the implied information, the overall meaning is dominated by the questioner, and the answerer deduces the implicated information based on the questioner's questions and prompts. In this paper, the generating and derivation pattern has been summarized as [Figure 1](#) shows.

As can be seen in [Figure 1](#), the QACJ's progressive producing and inferring path operates in six procedures. Meanwhile, according to whether the two parties obey the cooperative principle their thinking ways have been marked with solid and dashed lines, respectively. In the first step of QACJ's producing, the form structure embeds in the way of question, that is, the questioner proposes the confusing question (question which may cause different answers) by utilizing homo-phony, ambiguous words or structure, vague words or phrases, vague context, or implied illocutionary force. Here, the questioner first violates cooperative principle. In the second step, the answerer gives a conventional answer or silence in a conventional context, but we can not get the punchline and the questioner's intended meaning, which will cause the communication to

pause or be cold. In order to get the correct answer, the answerer tries to go on asking in the third step. The fourth step is to continue the communication, the questioner gives the nonconventional answer with implicature to trigger the intended presupposition. Then, the intended meaning emerges. The answerer's background knowledge and related context will be activated in the fifth step. In the sixth step, the answerer acquires the intended meaning by the garden-path relevant pragmatic inferring methods, that is, the presupposition entailment and relevance verifying. Finally, the punchline emerges, and the communication is complicated. The following examples 4-6 are those which utilize presupposition's cancelability, crypticity, flexibility, and plasticity to operate garden-path inferring:

(4) Questioner: why does he go out without any rain gear on a rainy day, but his hair doesn't get wet?

Answerer: He did not bring rain gear, but he had a bag or clothes to keep out the rain.

Questioner: No, because he doesn't have hair.

The OACJ interlocutor often utilizes the vagueness of presupposition to temporarily change the presupposition or virtually set a new presupposition to make conversational implicature. The presupposition can be deduced, so the hearer can infer its implicature by the back-inferring way to entail the presupposition. Example (4) utilizes the presupposition's cancelability. In example (4), firstly, the questioner's pragmatic purpose is not obvious when asking questions, and whose question is quite confusing. However, the answerer will conduct conventional reasoning in a conventional context with the lead of the question form and then supposes that the questioner's presupposition of the question is "he has hair or he is not a bald". Naturally, the answerer will entail the conclusion: he has a bag or clothes > his hair does not get wet from the rain. However, the answer does not conform to the questioner's intended meaning, so the conversation purpose fails, and the communication pauses. To make the communication continue, the questioner gives the trigger answer: because

he doesn't have hair. At this time, the answerer's superposition about "he has hair" is canceled. Meanwhile, the questioner's intended meaning emerges. Then, the answerer has an insight into the questioner's intention and obtains the true presupposition information. Then, he moves on to the nonconventional garden-path relevance reasoning, which also activates the optimal relevance between the question and the questioner's supporting answer. Up to now, the QACJ's conversational implicature is inferred completely.

(5) Questioner: Guess, which side does my heart live in my body?

Answerer: Left side.

Questioner: No, it's on your side.

Example (5) utilizes the presupposition's flexibility. When asking the question, the questioner doesn't frankly tell the answerer whether the "heart" is the organic part itself or its figurative meaning "mind, thought, idea". At this time, the question violates the qualitative maxim and the quantitative maxim of cooperative principle. However, the question leads the answerer to prejudge the questioner's presupposition that the heart refers to the physiological, not the psychological one. According to common sense, and based on the answerer's prejudgment, he makes conventional reasoning: the heart on his left side. However, the answerer still can not obtain the questioner's intended meaning. Thus, the communication temporarily stops. In order to continue the communication, the questioner gives the correct supporting answer in a nonconventional context to trigger his real presupposition, that is, the heart refers to the psychological one, which means emotions or thoughts. In this way, the pragmatic presupposition is shifted online. Then the answerer also changes his inferring direction to analyze and judge the questioner's intention according to the new presupposition. Up to now, the implication of the QACJ has been explored, and cold humor also emerges.

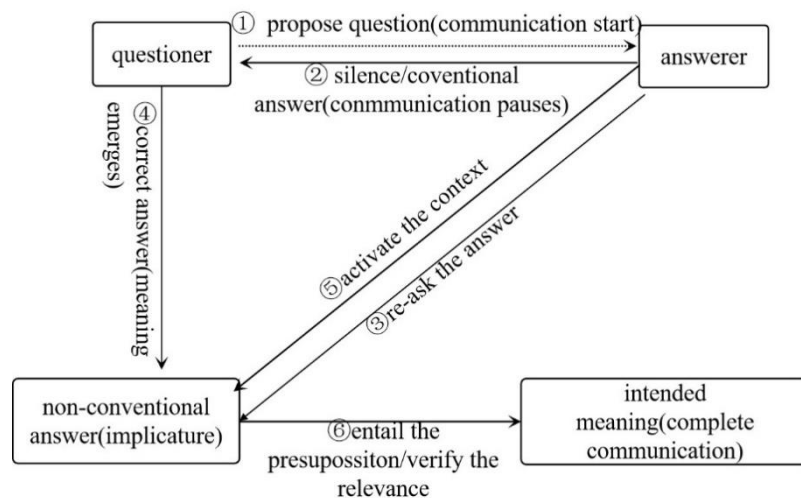


Figure 1. Progressive Inferring Model of the Implicatures in Question and Answer Cold Jokes

(6) Questioner: Good romance starts from friendship, but what does bad romance start with?

Answerer: Unfortunate encounter.

Questioner: No, bad romance starts with RA RA RA A-A~ RO-MA-RO-MA-MA GA-GA-O-LALA.

Example (6) utilizes the presupposition's crypticity. First, the questioner hides his real presupposition "bad romance here uses its literal meaning, "violating the cooperative principle. However, the question will lead the answerer to infer in a conventional context and prejudge the questioner's presupposition that bad romance is the opposite of good romance. However, the answerer can not get the questioner's intended meaning in that communication temporarily stops. To help the communication go on, the questioner gives a supporting answer that bad romance starts with RA RA RA A-A~ RO-MA-RO-MA-MA GA-GA-O-LALA. At this time, the supporting answer cancels the presupposition the answer holds. Meanwhile, the questioner's intended meaning emerges. Then, the answerer's background knowledge about RA RA RA A-A~ RO-MA-RO-MA-MA GA-GA-O-LALA is just a sentence of the song *BAD ROMANCE* will be activated, so he can rapidly get the questioner's intention. Finally, promoted by the garden-path inferring mechanism, both the questioner's intention and the QACJ's implicature can be inferred by the answerer and the passers-by.

(7) Questioner: Do you know what is the name of LI Bai's kid ?

Answerer: As far as I know, there is no related materials or research about his children.

Questioner: LI Bai's kid is named Ziyang.

Answerer: Why?

Questioner: Because he wrote in his poem: *rì zhào xiāng lú shēng zǐ yān* (日照香炉生紫烟, sunlight streams on the censer, which produces the purple smoke).

Example (7) utilizes the presupposition's plasticity. First, the questioner set a fake presupposition that LI Bai has a kid even though this presupposition is not common sense whose authenticity needs to be tested. Here, the questioner violates the quality maxim and quantity maxim in the cooperative principle.

Thus, even if the answerer gives the correct answer and the communication pauses, it can also lead the communication to continue. Later, the questioner gives the nonconventional supporting answer that LI Bai's kid is named Ziyang in a nonconventional context. Then the answerer is still confused by the questioner's answer, so he tries to ask for the reason. To make it clear, the questioner explains the answer with LI Bai's poem that *rì zhào xiāng lú shēng zǐ yān* (日照香炉生紫烟). LI Bai is a very famous ancient Chinese poet, and "日照香炉生紫烟(sunlight streams on the censer which produces the purple smoke)" is a sentence chosen from one of his masterpieces. "生" in Chinese is a multiple-meaning word that means "give birth to" or "arise". So, the questioner tries to personalize the *rì zhào*(日照) and *zǐ yān*(紫烟) in this poem. In that way, LI Bai is the husband, *rì zhào*(日照) can be the wife, and the kid will be the *zǐ yān*(紫烟). At this time, the questioner's intention emerges. Then, the questioner's supporting answer and explanation make the answerer rapidly understand the questioner's intention, and then activates his background knowledge about this poem of LI Bai, and also about the ambiguous meaning of "shēng(生)". Finally, driven by the red-light mechanism of garden-path inferring mode, this QACJ's implicature can be inferred, also the humorous effects. But the way of producing this QACJ is quite impolite, even illegal, and needs to be changed.

3.2. Regressive inferential model of the implicatures in question and answer cold jokes

The regressive inferring model of the implicatures in QACJs refers to the communication path in which the answerer provided the implied information. The overall meaning is dominated by the answerer, and the questioner deduces the implied information based on the answerer's answers and prompts. In this study, the generating and derivation pattern has been proposed, as Figure 2 shows.

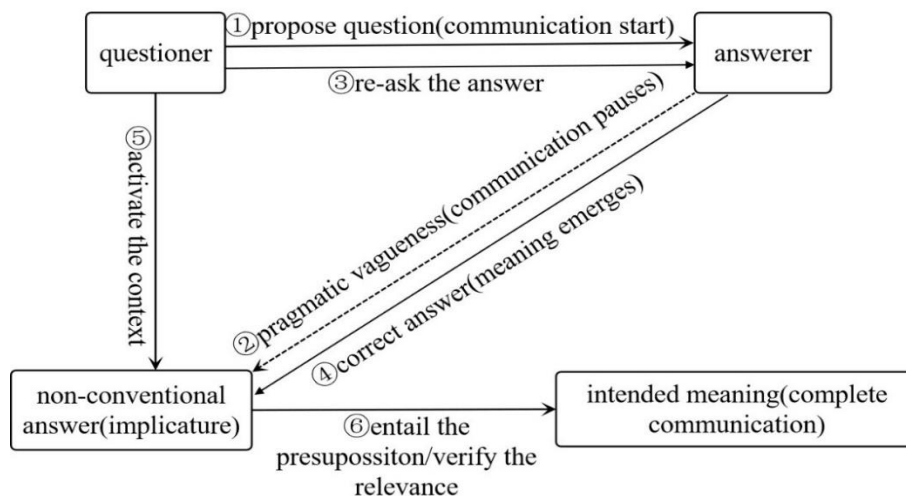


Figure 2. Regressive Inferring Model of the Implicatures in Question and Answer Cold Jokes

As can be seen Figure 2, the QACJ's regressive producing and inferring path also operates in six procedures. Meanwhile, according to whether the two parties obey the cooperative principle, their thinking ways have been marked with solid and dashed lines, respectively. The first step in the process of QACJ's producing involves the form structure embedded in the way of question, that is, the questioner proposes the confusing question (a question which may cause different answers). In the second step, the answerer first violates the cooperative principle, that is, he gives a nonconventional answer (by utilizing homo-phony, ambiguous words or structure, vague words or phrases, vague context, or implied illocutionary force) in a conventional context, but the questioner can not get the punchline and his intended meaning, which will cause the communication pause or be cold. In the third step, to get the correct answer, the answerer tries to go on asking. To continue the communication in the fourth step, the answerer gives the correct answer with implicature to trigger the intended presupposition. Then, the intended meaning emerges. In the fifth step, the questioner's background knowledge and related context about the nonconventional answer will be activated. In the sixth step, the questioner acquires the intended meaning by the garden-path relevant pragmatic inferring methods, that is, the presupposition entailment and relevance verifying. Finally, the punchline emerges, and the communication is completed. The following examples 8-10 are those which utilize the shiftability and vagueness of context to operate garden-path inferring:

(8) Questioner: Do you have a girlfriend?

Answerer: Yes, she is from another nation.

Questioner: Cool! Which nation?

Answerer: Imagination.

(9) Questioner: What did you do with the money I gave you yesterday?

Answerer: I gave it to a poor old woman.

Questioner: You're a good boy. But why are you so interested in the old woman?

Answerer: She is the one who sells the candy.

Examples (8) and (9) both utilize the context's convertibility. In example (8), firstly, the questioner introduces the topic with the question form "Do you have a girlfriend". The answerer gives a positive answer and some additional information that she is from another nation. To make the communication smoothly continue, the answerer skillfully shifted the context and the topic. Then, the questioner asks for the information again about the answerer's additional information in a conventional context. However, the answerer changes the context again and answers with a nonconventional answer with some implicature. The answerer just utilizes the indirect relation between the morphological feature of "nation" and its nonconventional answer "imagination". At this time, the answerer's intended meaning emerges. Finally, the questioner's related background information about "nation" is part of the imagination that is activated, and then he can rapidly understand the answerer's intention. Next, the questioner turns to infer the implicature in a garden-path

way, which is driven by the red-light mechanism. Up to now, the humorous effects have been realized. In example (9), the questioner first proposes the question about money in a conventional context. The answerer seems to give a quite conventional answer that he has given to an old woman. The questioner still doesn't get the background information about the old woman story, so he proposes another question about the woman. From his question of why the answerer is so interested in the old woman, the fact that the questioner has prejudged that the boy just gave a helping hand to the old woman can be inferred. However, to let the truth and the punchline come out, the answerer gives an explanation that is irrelevant to the second question. Meanwhile, the answerer has skillfully shifted the context into a nonconventional in that he and the old woman share the seller and customer relationship. Then, the questioner can rapidly activate his background knowledge about the new contextual information. Thus, the punchline and humorous effects emerge, and the conversational implicature is inferred.

Example (10) utilizes the relevance between the question and the answer for the garden-path inferring.

(10) Questioner: What time does Sean Connery get to Wimbledon?

Answer: Tennish.

Questioner: What does it mean?

Answerer: Tennish, T-E-N-N-I-S-H. The way that stammerer star would say for about ten o'clock.

In example (11), the questioner first introduces the topic in the form of a question to lead the answerer to respond. For the expression effects, the answerer violates the relation maxim and manner maxim on purpose. In other words, the answerer doesn't give a related answer in a correct way, in this way, the implicature emerges and the communication become cold, that is, temporarily stops. Since "tennish" is a quite strange word, the questioner doesn't get the meaning and then re-asks for why. Then the answerer gives the interpretation which is full of much background information: Wimbledon is the famous tennis court in England; Sean Connery is a famous Scottish actor, and he is also a stammer; Sean Connery will misread the tennis as tennish because of his stuttering accent; tennis and tennish are homophones, and the suffix -ish means "about, more or less"; tennish can refer to "about ten o'clock". In this way, the answerer's intended meaning emerges, and the questioner's related background information and the nonconventional context have been activated, then to conduct the inferring about the implication. Compared with "about ten o'clock", "tennish" is quite abstracted, or more yì hé (意合, paratactic). Later, the questioner can infer the answerer's implicature and intention through the garden-path relevant inferring method, finally making the communication complete.

4. Conclusion

Question and answer cold joke is a form of language that temporarily implies the real intention of the speaker to show humor, and it is difficult to understand. The expected

effect requires sudden enlightenment after reasoning. The garden-path humor through the application of phonetic, lexical, syntactic and discoursal strategies' operation, such as the homophone, words' multi-meaning, ambiguous structure, the vague solution to lexical meaning, pragmatic purpose, presupposition, and context, as well as the concealment of illocutionary force, will leave the receivers a sense of "talk back". At the same time, such a sense will naturally promote the receivers to infer the conversational implicature in QACJ and to promote the communication continues gradually. The production process of QACJ is quite complicated. This paper aims to explore the general laws of its production by analyzing its conceptual basis and inferring modes. There are four conceptual bases of QACJ, intersected Q&A form, indirectly correlated logic, garden-path inferring, and cold but humorous effect. The analysis of its conceptual bases can support its conceptual definition, classification, and implied information inferring. Furthermore, inferring the conversational implicature can also reflect its producing. QACJ belongs to successful communication, which has progressive and regressive producing paths. During the process of implicature production, there must be a short communication pause created by the interlocutors deliberately, which will lead to coldness. Under the condition of integrating the conversational implicature theory, relevance theory, and pragmatic presupposition theory, QACJ's overall analytic model has been formalized. Based on the model, its progressive path and regressive path have been schematized, respectively. Deduction of the implicature in QACJ needs a garden-path inferring method, among which some cognitive-pragmatic strategies, such as presupposition entailment, relevance verification, context shifting, concretely speaking, the canceling, shifting, virtually setting, temporarily transferring, hiding true context, context's temporarily transferring, etc.

Compared with the previous inferring model, this comprehensive analytic inferring mode shows some advantages, which are manifested in three aspects. The first involves taking form, meaning, and pragmatics into consideration and also highlighting the influence of form embedding on meaning production. Second, it highlights the utterance-producing process, i.e., how the communication realizes. Finally, the current study fills the gap in the literature on complicated conversational implicature inferring. Analysis of the QACJ's conceptual bases can be beneficial to know its essence. A study on the conversational implicature inferring guided by the comprehensive analytic inferring mode can be useful to explore its general producing laws. Besides, this mode can also be applied to the conversational implicature studies of other particular humor phenomena, which leave huge theoretical significance for language research in such fields. Additionally, the current study can have some positive effects on language users' language expressing ability's promotion, then show high pragmatic effects. However, there are many inappropriate examples of QACJ in our daily life, for example, false or illegal use of famous ancient Chinese poems, proverbs, idioms, and song lyrics. There are

some related rules to control and restrict these illegal or abnormal language expressions, but they can not stop such phenomena. Thus, the later research can also start from communication subjects to change those illegal, abnormal QACJs into good, normal, legal ones through pragmatic strategies. In that way, the receivers can be led correctly and benefit from constructing a harmonious discourse ecology.

Declarations

Competing interests

None.

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