

A Review on Second Language Learners' Irony Comprehension

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Abstract—Irony, as a pragmatic tool, is often used in daily conversation by native speakers. However, for second-language learners, irony comprehension can be a barrier in conversation when they try to understand native speakers' usage of this pragmatic tool. This study aims to identify factors that are critical for irony comprehension and find out training methods that address these issues to improve second-language learners' ability of comprehending irony. To this end, we review studies about (1) native speakers' irony comprehension, highlighting three factors that play an important role: intonation, common ground, and context; (2) second-language learners' implicature comprehension, elaborating the role of two kinds of factors: within-implicature factors and learner-related factors; (3) second-language learners' irony comprehension and training projects that help improve this ability, finding out the key difficulties of irony comprehension for language learners and the ways to improve. In addition, this study also proposed some future directions for this line of research.

Index Terms—Irony, second language learning, implicature, pragmatic comprehension.

I. INTRODUCTION

Conversational implicature, proposed by Grice [1], is a type of language usage that goes against cooperative principles. It is used to express the meaning beyond the literal utterances. As a sort of implicature, irony is commonly used in the daily conversation of native speakers and plays an important role in our daily interaction, and therefore becomes a necessary tool to acquire during language learning [2], [3], [4], [5]. However, irony comprehension is not easy for language learners. In addition, language learners can hardly detect the irony and sometimes they may misunderstand speakers' intention.

Verbal irony is a pragmatic tool that people always use to express a certain meaning that is different from, and especially, opposite to the literal meaning [3]. Combining with existing studies, we adopt two assumptions about irony, following Kreuz [6]: First, we have an explicit definition of irony: specifically, the speaker's intention is different or even opposite to its literal meaning. In many studies, irony is often used to compare with other rhetorical usages, such as humour, hyperbole, etc. [7], [8]. To focus on irony, and not any other rhetorical tool, we define irony as a usage in which a sentence's implied meaning is different or opposite to literal meaning. Second, we consider irony as the same as sarcasm. Even though some experiments showed that irony and sarcasm are different terms to participants (e.g. in [9],

participants considered that sarcasm is more ridicule than verbal irony), many researchers tended to equate the definition of irony and sarcasm [10]–[12]. For example, Kim and Lantolf [11] defines sarcasm as a sub-category of verbal irony. Pexman et al. [12] uses the term 'sarcasm' to refer to a typical usage that expresses a meaning opposite to its literal meaning, which is exactly the common definition of irony. Thus, in this review, we did not distinguish two terms from each other.

Researchers found that different language learners showed different degrees of irony comprehension [4], [11], [13]. Studying how do people comprehend irony, what may influence the irony comprehension ability and how to improve language learners' ability to comprehend verbal irony helps language learners to better adapt to the language and the culture.

In previous studies, researchers found that some potential factors influence irony comprehension, such as intonation, common ground, context and language skills (mainly in the second language, or L2 studies). Despite the development of this line of research, a less studied, but growingly more important direction is L2 irony comprehension and ways for improvement. Considering that irony is a type of implicature, this study aims to review studies about L1 irony comprehension, L2 implicature comprehension, and L2 irony comprehension. In this way, we provide suggestions for further study of irony comprehension. The rest of the paper is structured as follows: In the next section, we summarize potential factors of irony for native speakers as found in previous studies. In the third section, we focus on the improvement of implicature comprehension, which is more fruitful than the study of irony comprehension. Then in the fourth and the fifth section, we talk about what may influence irony comprehension of language learners, and how to advance language learners' ability of irony comprehension.

II. POTENTIAL FACTORS OF VERBAL IRONY

A. Intonation

In the past decades, researchers conducted experiments to study the characteristic tones of irony. Acoustic research conducted by Rockwell [14] proposed that frequency, pitch range, length of utterance and amount of sound can distinguish sarcastic statements from non-sarcastic. Voyer and Techentin [15] examined the influence of tone from seven aspects, clarity, tempo, resonance, pitch, pitch variation, intensity, and intensity variation which showed that all auditory factors can be used to identify sarcastic utterances. In addition, Yang [16] found the link between sarcasm and intonations. By using the ratings of participants on whether

Manuscript received September 25, 2021; revised May 15, 2022.

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the utterances involved the voice quality features and acoustic analysis, Yang concluded that nasal, breathy, and pharyngealized voice are contained in sarcastic utterances.

However, some experiments have shown that intonation is not necessary for irony comprehension. In a reaction-time paradigm experiment, the result showed that a mocking intonation can help adults more quickly understand the ironic utterances. While in the written discourse, irony can also be well-perceived without intonation information [17]. Moreover, Bryant and Fox Tree [3] proposed that there is not a certain ironic tone in verbal irony, and irony interpretation relies on multiple cues and other information. Cutler [18] also proposed that if the context gives enough information for irony, irony can be processed without intonation.

In sum, regarding the role of intonation as a factor of irony, the findings/conclusion from previous studies are controversial. Furthermore, verbal irony is not only used in spoken language but also in written language. For simplicity, we do not discuss the role of intonation in a future discussion.

B. Common Ground

Irony comprehension is related to the content of utterances [19]-[21]. However, the content can be expressed in two ways, context and common ground. To prevent confusion between common ground and context, we defined context as a concept often reflected in discourse or a happening event in a situation, while the common ground is a discourse that contains a certain knowledge, belief or attitude for comprehenders to understand [21]. Here, common ground is a non-linguistic and objective concept, which can account for two conditions: common background and common culture. Common background means both speakers and listeners are under the same situation or experiences, such as they are talking about a certain thing or a person they knew. For common culture, it means speakers and listeners have common knowledge or history.

Many studies have proved common ground is crucial for listeners to comprehend a speaker's intention through verbal irony [22], [23]. For example, Sánchez [5] and Baena [2] collected materials from radio programs. Their experiments showed that without the shared knowledge, such as culture and history, it would be hard for listeners to understand the intention of speakers. Kreuz and Link [24] examined the correlation between irony comprehension and the common background. In his research, he designed two degrees of common background. High common ground means all the people were a part of an event, such as 'John said to Lisa'; while lower common ground means people did not in the same event, such as 'John said to a stranger. The results showed that the higher common background could make participants more quickly understand verbal irony than the lower common background.

C. Context

In addition to common ground, context is also a widely studied factor. Irony often contains a meaning which is different or opposite to the literal meaning. Also, the different or opposite meaning is often provided by context. It seems that context can be a direct factor for comprehenders to detect the irony. According to the context, whether the implied meaning can be well detected depends on the incongruity

between context and literal meaning. Therefore, the role of context in irony comprehension was further studied in different researches.

Researchers generally agree that verbal irony can exist in two types of context incongruity [19], [20], [25], [26]. One type of context incongruity is situation disparity, which means the incongruity between expectations and reality [20], [26]. In other words, statements provide a counterfactual meaning to show the ironic meaning, and the degree of irony depends on the degree of situation disparity. For example, when a person was late for an appointment, the speaker said 'You are so punctual', in which the reality was opposite to the expectation yielded by the literal meaning of the sentence. What that speaker said is then understood as irony. Gerrig and Goldvarg [20] compared the extent of different situation disparity. They compared the listener's rating of irony when they are either 5min late (a weaker disparity) or 50min late (a stronger disparity). Both situations are compared to the expectation of being punctual. The result showed that greater disparity led to a higher rating of irony than weaker disparity). Another type of context incongruity is the incongruity between the context and reality, which means that the implied meaning given by context is different from reality [19], [27]. Different from situation disparity, in which the incongruity happens in expectations and reality, this incongruity happens between the implied meaning of utterances and reality. That is, utterances provide an implied meaning to show the ironic meaning. Meanwhile, the degree of irony depends on the degree of incongruity between context and reality. For example, a man was angry and he yelled at his girlfriend. Colston and O'Brien [19] designed utterances with three degrees of ironic meaning for the girl: (1) strong verbal irony: 'Aren't you in a magnificent mood?'; (2) weak verbal irony: 'Aren't you in an agreeable mood?'; (3) literal utterance: 'Aren't you in a bad mood?'. From these three interrogative sentences, they found that the first utterance has a more intensive ironic meaning than others.

Ivanko and Pexman [28] studied these two kinds of incongruity together. They proposed that both situation disparity and context influence irony comprehension. To examine the influence of incongruity in irony interpretation and processing, they designed experimental materials in which the context and statement for situation disparity were in the same conversation set, such that they compared the ironic and literal statements in the same degree of ironic contexts. To test the influence of context, they set three degrees of ironic context: strong verbal irony, weak verbal irony and literal utterance. They found that statements in a strong ironic context need more time to understand than a literal context. At the same time, statements in a weak ironic context need less time than or equivalent to a literal context. Their findings from the experiments proved the importance of context in irony and literal statements processing, and appropriate context can help process the irony meaning.

D. Summary

In this section, we reviewed three factors of irony comprehension: intonation, common ground and context. Intonation information can provide information for comprehenders to detect irony utterances in spoken language. Having common ground with the speaker can help

comprehenders better understand irony. Context can facilitate comprehenders' processing of incongruity detection, then understand irony. Note that these three factors are intrinsic to irony, meaning that they are part of certain characteristics of irony. Therefore, we refer to these factors as within-irony factors. As we discussed earlier, intonation is not necessary for irony comprehension, and we will mainly focus on the other two factors in the rest of the paper. In addition to these within-irony factors, which are usually studied under the context of native speakers' comprehension of irony, other factors also play important roles, especially for language learner's comprehension of irony.

III. IMPLICATURE COMPREHENSION FOR L2 LEARNERS

Most studies of L2 irony comprehension were based on L2 implicature comprehension, before reviewing L2 irony comprehension, we should retrospect the studies of L2 implicature comprehension. Since conversational implicature was proposed by Grice [1], a question was also proposed by researchers: Can language learners comprehend implicature correctly? If the answer is yes, how did language learners acquire the ability of implicature comprehension? In this part, we reviewed several experiments to state three factors, which may influence implicature comprehension: common ground, context and additionally, language skills.

A. Within-Implicature Factors: Common Ground and Context

Both common ground and context are within-implicature factors in implicature comprehension [29]. In Relevance Theory, proposed in Sperber and Wilson [30], they proposed that context is an important role in a discourse, and implied meaning can be easier to understand in a stronger relevant context than a weaker relevant context. Compared with a common background, culture plays a much more important role in language learners' comprehension in implicature comprehension. In L. F. Bouton [31], they studied to what extent can cultural background affect an L2 learner's interpretation of conversational implicatures in English [31]. To this end, he designed a multiple-choice test to examine the ability of participants who have just attended the University of Illinois. Results showed that cultural background influenced the comprehension of implicatures. In addition, cultural differences showed different abilities from each other. Bouton selected participants from seven kinds of language/culture to do an implicature test. The scores showed that native speakers are different from all other participants. German and Spanish/Portuguese have no difference from each other and Taiwan Chinese, but they are significantly different from Korean, Japanese and Mainland China. Taiwan Chinese has no difference from Korean and Japanese, but significantly different from Mainland Chinese. Moreover, there is no difference among Korean, Japanese and Mainland Chinese [31]. In this experiment, the results showed that native speakers performed more effectively than non-native speakers, and cultural background is exactly an important role in implicature comprehension. For the reason that Korean, Japanese and Mainland Chinese are from totally different cultural backgrounds, they interpret the same event with a different meaning. However, there could be one more

possible reason for the results: language proficiency. Participants' TOEFL scores are ranged from 467 to 672 in which the language proficiency was not within a certain limit. In this case, even they understand the event in the same way, due to the low language proficiency and language barrier, participants cannot well interpret the implicature. Bouton [31] did not explicitly take this into account.

B. Learner-Related Factors: Language Skills

Language skills are learner-related factors in implicature comprehension. There are two ways to describe the condition of the speaker's language skills [29]. One is the language proficiency assessed by test scores [32], [33]; another is the language experiences related to the length of residence [34], [35]. Language proficiency can reflect the ability of language comprehension, and it is related to the language learners' cognitive factors, while language experiences are an accumulation of language usages. With the growth of residence, language learners will gather more experiences on using the language, and these experiences can help language learners better detect the implied meaning under literal utterances.

To study the influence of language experience, studies are often conducted in environments in which the local language is not the participants' native language. Although L. F. Bouton [31] had already found that culture can affect participant's comprehension, he did not answer whether participants' comprehension can be improved. Therefore, Bouton [34]-[36] made two longitudinal studies between 1990 to 1993 and between 1986 to 1991 respectively. In the experiment between 1986 to 1991, results showed that participants of interpreting implicatures have become more native-like than before. Even though, there was still a type of implicature they performed not as well as native speakers did due to content that contained American culture. While in the experiment between 1990 to 1993, Bouton found that NNS seemed to attain great progress during their 17th month after they staying on campus. These experiments showed that implicatures can be learned with the growth of residence and language experiences.

In contrast, studies on language proficiency recruit participants who were learning languages in their native country. In Taguchi [32] research, she adopted a listening task to examine the relationship among language proficiency, comprehension speed and accuracy. In the experiment, participants were in two different degrees of language proficiency: one was from an intensive English program, and another one is from the general education in university. Both of their degrees of proficiency were measured by TOEFL scores. As for the experiment materials, Taguchi designed two types of implicatures, more conversational implicature and less conversational implicature. The more conversation implicature contained negative and non-negative meaning, while less conversational implicature included indirect requests and indirect refusal. The results of listening tasks showed that higher language proficiency can lead to higher accuracy but cannot lead to faster comprehension speed. However, she also found that if participants' language proficiency cannot help them to get access to the implied meaning, they would complete the task relying on their cognitive skills. This result indicated that participants'

cognitive factors can also be important to language learners' implicature comprehension.

To further study the relative factors of L2 implicature comprehension, Taguchi [33], [37] conducted two experiments to research the relationship among accuracy, comprehension speed, proficiency and cognitive factors. The first experiment is a 7-week training project in which participants had limited exposure to English. Taguchi [33] designed tasks to examine the learning effect by comparing the task scores of comprehension time. The results showed that the development of implicature comprehension did not show the same pace improvement in accuracy and comprehension speed. With the improvement of semantic judgement speed, pragmatic comprehension speed was also improved, indicating the improvement of the ability of implicature processing and access. This is evidenced by lexical access speed, which was related to pragmatic comprehension speed but not to accuracy; similarly, language proficiency was related to accuracy rather than comprehension speed. In the other experiment, Taguchi [37] designed five different tasks to examine whether phoneme, semantic, language proficiency and cognitive factors were related to implicature comprehension. The results were following Taguchi [32], [33], where comprehension accuracy was only related to language proficiency and comprehension speed only related to lexical or semantic access. In addition, both comprehension accuracy and speed were not correlated with each other. In addition, even though Taguchi [33], [37] did not prove the correlation of cognitive factors, their results evoked researchers' interest in the bottom-up processing approach in a learner's language study.

Based on the many studies on implicature comprehension, researchers turned to irony comprehension of language learners, a subordinated usage of implicature in daily usages. According to the studies on factors in irony comprehension for native speakers and implicature comprehension for language learners, many researchers selected to adopt different training projects to find out how to improve the ability of verbal irony comprehension and to what extent can training projects improve language learners' comprehension ability.

IV. IRONY COMPREHENSION FOR LANGUAGE LEARNERS

A. Studies about L2 Irony Comprehension

As a special usage of implicature, L2 irony learning is also an important point to research. However, researches on L2 irony are always focused on learners-related factors. Shively *et al.* [13] experimented to examine the influence of language proficiency in irony comprehension. The participants of the research were in three degrees of language proficiency: beginners, intermediate level learners and more advanced learners. From the experiment, Shively proved that higher language proficiency can lead to a better comprehension of ironic utterances. In addition, Shively proposed that more contextual cues may facilitate the comprehension of irony. The second experiment adopted an audiovisual context, which included both written, audiovisual scenes. Contrary to expectations, results showed that this kind of multi-modality form of context did not distinctly facilitate irony

comprehension of participants, especially for beginners. This multi-modality form only helps advanced learners in a certain scene, in which the content of written form was shown with an audiovisual scene: facial cues. Take the following situation as an example: after reading the written statement, the participants considered the statement as friendly meaning, while the facial expression showed an unfriendly meaning. In this scene, advanced learners can successfully detect the ironic meaning. This result was attributed to the limitation of cognitive factors in which language learners did not have more attention to simultaneous processing both written, audio and visual information. Nonetheless, this result showed a possibility to improve irony comprehension by explicit training.

Similar to [13], Bromberek-Dyzman, Jankowiak, and Chelminiak [38] experimented to examine the importance of multi-modality input. Different from selecting participants in three different degrees of L2 language proficiency in [13], Katarzyna only focused on participants who are advanced in L2 proficiency. In his research, he respectively examined the influence of written context, audio context, and the audiovisual context in both L1 and L2. Compared within the L1 or L2, the results showed that even irony comprehension in audio context or audiovisual context were slower than in written context, while the accuracy of comprehension in audiovisual context was the highest among three types of modalities. As for the comparison between the L1 and L2, the results showed that both accuracy and comprehension speed were similar to each other, which means the influence of modality input is uncorrelated to language but correlated to the efficiency of irony comprehension. These results further supported the research of [13].

In addition, in Bromberek-Dyzman and Rataj [39], the experiment was conducted to initially examine the difference of irony comprehension between the native language and second language. The result showed that participants need more time to process ironic utterances in their second language than in their native language. Furthermore, they found that L2 irony can be processed as quickly as native language if language learners are proficient in the second language.

Furthermore, Ellis, Zhu, Shintani, and Roever [40] studied both the effects of language proficiency and language experience in Chinese learners' irony comprehension. The research compared the performance between native speakers and non-native speakers, and the results indicated that language proficiency was exactly related to the irony comprehension ability, but in a weak correlation. As for language experience, only the time of overseas stay was related to irony comprehension rather than the language learning time. This result of language proficiency was slightly different from Taguchi [32], which found that learners with higher language proficiency tended to perform better in irony comprehension. Note that in Taguchi's research, participants were students in a branch U.S. college, which meant their instruction language was English, while in Ellis *et al.*'s research, participants were students whose instruction language were Chinese. This difference in instruction language may lead to lower language proficiency in participants of Ellis *et al.* [40] than participants of Taguchi [32]. As a result, even language proficiency was correlated

with irony comprehension in Ellis *et al.* [40], it is in a weak correlation. As for the result of language experience, it was similar to Bouton [31], [34]-[36], finding that implicatures could be learned after a long residence time as the learners got more language experiences. However, the only extensive overseas living experience was related to irony comprehension, which may be due to the time of language exposure. Only overseas living experience provided enough language experience rather than the time of language learning.

B. Training Projects in Irony Comprehension Improvement

With deeply researching on L2 irony comprehension, researchers tried to find an efficient way to improve language learners' irony comprehension ability. In previous studies on L2 irony, participants often attended general English courses [41], [36]. Even though there were studies in which participants attended specific instruction about implicature [40], there was relatively few research on L2 irony comprehension with carrying through training projects. Kim and Lantolf [11] conducted a 10-week training project to improve L2 irony comprehension. The researcher adopted tests before and after training projects and interviews to assess the improvement of language learners. The results were as the expectation that irony comprehension ability of language learners was distinctly improved after training project. At the same time, it also showed the feasibility of improving L2 irony comprehension by explicit instruction.

From comprehension studies and training studies, explicit instructions are considered to be helpful to improving L2 irony comprehension. However, how to design an efficient training project is still a problem to solve, and the potential difficulties L2 in irony comprehension need to be taken into consideration.

V. DISCUSSION

A. Difficulties in Pragmatic Comprehension for Language Learners

Many researchers proposed that the difference of processing approach between native speakers and language learners may be an important barrier in pragmatic comprehension. Kasper and Rose [42] proposed problems that may influence pragmatic comprehension. Language learners always relying on bottom-up processing. They can hardly make full use of comprehension cues to link the literal text with the context and the knowledge of the background. In Taguchi [37], the experiment proved that language learners may use the bottom-up processing approach in pragmatic comprehension, which relies on linguistic information, such as intonation, lexical access. While native speakers use a top-down processing approach, which relies on contextual information, such as intuition and experience [4].

In [4], four causes were given to explain the difficulties in interpret sarcasm: '(1) participants may not know how sarcasm was used in discourse. For L2 learners, they may not realize the form of sarcasm in context. (2) participants may not have enough examples to help them understand what kind of utterances is sarcastic. This problem may be related to their language experience, (3) participants may not know what

cues can express sarcasm, such as intonation. In an utterance, tone of voice, stress can be a cue for listeners to detect sarcasm, and (4) participants may have different expectations in a context in detecting and processing irony. Different processing approaches may lead to different comprehension patterns, which will cause misunderstanding of interlocutors' intentions under the utterances [43]. Kim also proposed that native speakers can successfully process sarcasm by their top-down knowledge structure, while L2 learners only have to rely on a bottom-up knowledge structure. Both Kasper and Kim claimed that learners rely on bottom-up processing. However, Giora [44] proposed that top-down processing and bottom-up processing may proceed in parallel channels. Learners access the semantic meaning initially, and at the same time, they make inferences on implicatures based on the context and background knowledge.

B. Future Directions

This paper has reviewed previous studies about L1 irony comprehension, L2 implicature comprehension, L2 irony comprehension, and training projects for improving L2's irony comprehension ability. This paper reviewed these topics from potential factors that influence comprehension to training projects that help improve L2 learners' comprehension ability. It showed that with the discovery of studies on L2 implicature, L1 and L2 irony comprehension, researchers tend to explore efficient ways to improve L2 learners' comprehension ability.

Inspired by the studies we have reviewed here, there are much more we can study on training project design and language teaching. Compared to the results of [13] and [38], we can see that multi-modality input can be helpful for advanced language learners. To generalize to a larger group of language learners, perhaps we can design a suitable modality training project for beginners and intermediate level language learners to improve their irony comprehension ability. For this goal, we can consider the suggestions provided by Kasper and Rose [42]: Teaching content can be designed to help learners use top-down processing in pragmatic comprehension and help learners connect literal meaning with context and background knowledge that can predict implied meaning. In addition, what kind of materials will be useful for language learners in instruction can be an important consideration. As for the requisite knowledge of the cultural background, we also need to think over how to make language learners know more about knowledge of culture, and what kind of cultural knowledge we need to comprehend irony. Furthermore, whether the interest in studying irony usage can be an important factor for language learners may provide a new thought about language teaching. Future studies can base on the questions proposed above to explore better training methods on irony comprehension. We hope this review can be a connecting link between the previous and the future studies in improving L2 irony comprehension.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ACKNOWLEDGMENT

I would like to express my gratitude to all those who helped

me during the writing. I sincerely acknowledge the help of Ms Duan Yunyan, who has offered suggestions in my academic writing. And I would like to express my gratitude to my parents who have supported me in the whole process.

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