Verbal Expressions of Risk Communication: A Case Study After the 3.11 Crisis

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[Received March 2, 2014; accepted June 6, 2014]

This paper explores problems related to verbal expressions of risk communication. In particular, we analyze several problems that arose during the critical situations caused by the accidents at the Fukushima nuclear plants following the Great East Japan Earthquake from pragmatics, linguistic psychological and social psychological perspectives. e focus on verbal expressions with implicatures and expressions incongruent with the sender's right of involvement, underscoring that these expressions can lead to inferences on the part of the receiver that were intended by the sender and/or to negative images about the sender.

Keywords: verbal expressions, implicature, right of involvement, illusions of transparency, Fukushima Nuclear plants

1. Introduction

In this paper, we explore problems related to verbal expressions of risk communication from the perspective of pragmatics and psychology. Risk communication is "an interactive process of exchange of information and opinions among individuals, groups, and institutions" (National Research Council (NRC), 1989 [1]).

In Japan, this definition is not properly understood and is sometimes misinterpreted. The misunderstanding or misinterpretation occurs partly because Japanese has no words that are equivalent to "risk" or "communication." In Japan, risk communication is referred to as merely "an exchange of information and/or opinions," which ignores the importance of its status as "an interactive process." Indeed, communication, including risk communication, should be interactive in nature.

Japanese experts or policy makers who transmit risk messages to the general public often ignore this interactive aspect of risk communication. As a result, they tend to focus only on the content of the message (i.e., what they say). There is a lack of awareness of the appropriate way to express the message (i.e., how to convey it) given the perceptions of the audience. Since the Great East Japan Earthquake on March 11, 2011 and the consequent Fukushima Daiichi Nuclear Power Plant accident, the government and Tokyo Electric Power Company (TEPCO) have provided various pieces information through the mass media. These have been issued by a variety of senders, from the Japanese Government to individual ministries and local governments. Among the communicated messages, some can be judged as difficult to understand, eliciting more anxiety, or as lacking sincerity.

The information provided after the earthquake and nuclear accident can be classified as risk messages (National Research Council, 1989 [1]). If a risk message is poorly communicated, the receiver may misunderstand the content, and problems may occur in the risk-communication process, which should be interactive.

This article draws on the perspectives of pragmatics, linguistic psychology, and social psychology to consider why these problems occurred. Specifically, we discuss the following issues: the implicatures of verbal expression, the problems caused by disregarding the right of involvement related to the content of verbal expression, the impressions left by equivocal expressions, and the misunderstandings caused by the illusion of transparency. We also discuss possible solutions to these problems.

In the following discussion, we refer to speakers or writers of messages as 'senders' and to hearers or readers of them as 'recipients.' When we refer to senders and recipients together, we use the term 'communicators.'

2. Pragmatics and Communication Models

When troubles emerged after the earthquake, the Chief Cabinet Secretary and other people in charge made various comments regarding situations, and members of the Tokyo Electric Power Company made apologies for their faults. However, it is considered that some of these messages were not understood by the recipients (i.e., mainly ordinary citizens) as was intended by the senders. We analyze these problems from a linguistic viewpoint, especially in the light of pragmatics.



What is communicated with verbal expressions is not defined only by literal meaning. These expressions are variously influenced by the situations in which they are uttered and by the communicators' knowledge and assumptions (common grounds) (Clark, 1996 [2]). For instance, an utterance,

1. It is hot, isn't it?

can be intended and interpreted as a greeting about the weather. However, when the recipient is near the window, it might be a request to open a window. Pragmatics is a branch of linguistics designed to elucidate systematically how the sender's intention is transmitted to the recipient by analyzing not only linguistic features of messages but also various factors surrounding the communication (Levinson, 1983 [3]). What is considered to be important here is that the communication process includes inferences. Failures in risk communication which are to be discussed in this paper can also emerge from this point.

2.1. Models of Communication

Traditionally, in order to illustrate communication processes, code models were often used. In the Japanese language, for instance, the sender produces a sentence adhering to the grammar (i.e. code) of Japanese (encoding) and send it out as a vocally or letter message. The recipient understands the contents of the sender's message relying on a knowledge of the grammar of Japanese (decoding) (**Fig. 1**).

However, this model cannot cope with the inference processes we discuss here. A model which compiles these processes is considered to be more appropriate (the inference model) (Sperber and Wilson, 1995 [4]). An illustration of this model is shown in Fig. 2. In this figure, "nonverbal" elements refer to the tone of voice, facial expressions, gestures, and so on, in a spoken message. In a written message, they refer to various symbols (e.g. emoticons in E-mail), fonts, layout, and so on. The common ground is what should be shared by the sender and the recipient: specifically, they consist of the situation in which the communication is conducted, what has been communicated by them thus far, and their common sociocultural knowledge and assumptions (Clark and Marshall, 1981 [5]). The sender of the message attempts to communicate by using a combination of words and nonverbal elements, together with the common ground with the recipient.

However, the ground held by the sender and by the recipient does not always match. The recipient might infer the intention of the sender without knowing the latter's actual situation, the recipient making an inference referring to some features of the message and his or her own situation. This sometimes results in the failure of communication. It has been pointed out that some linguistic forms tend to induce specific types of inferences. In this paper, we take up three types of inferences (impliature) which were discussed by Levinson (2000) [6].

When the person in charge communicates a message, let us say, about an accident at a nuclear power plant, he



Fig. 2. Inference model (modified version of Okamoto, 2011 [7]).

Transmission

Noise

Reception

Inference

Refere

nce

or she has sufficient circumstantial information relating to the accident. On the other hand, recipients, especially ordinary citizens, are often unaware of such information. When the message is reported by newspapers, although its core part may be literally described, its peripheral parts or the background circumstances are often curtailed or omitted. Even when these parts are also reported in detail in an article, some recipients might pay attention only to the core part without scrutinizing all parts of the article. Therefore it is likely that recipients interpret certain subtle linguistic features which appear in the core part of the remark in a manner unintended by the sender. Therefore, in this paper, we will direct our attention to the forms of messages, while acknowledging the importance of their contexts.

3. What Is Implicature?

Among inferences made by recipients, while some are apodictic, others are not. An example of the former is an inference from,

2. Ken is younger than John.

to,

3. John is older than Ken.

Here, if the antecedent (2) is true, the conclusion (3) holds in any situation.

Some of the latter non-apodictic inferences are called implicatures. Grice (1975) [8] discussed these implicatures systematically; he pointed out that, communicators, in participating communication, share several assumptions as implicit principles ("cooperative principles of conversation") and that implicatures are communicated by such principles as well as their common grounds. Some implicatures are inferred only when the specific common ground is shared between communicators (particularized implicatures), while others are inferred in wide contexts unless cancelled by some special contextual features (generalized implicatures).

We focus on the latter, generalized implicatures, following Levinson (2000 [6])'s discussion. They are subcategorized into Q, I, and M-implicatures.

3.1. Q-Implicatures

With Q-implicatures, what is not expressed explicitly in a remark is inferred not to hold true. Q-implicature may be called "qualifying impicatures." For instance, consider when Tom says,

4. I have two hundred dollars now.

The following is usually considered to be true.

5. Tom has just two hundred dollars, not more than that amount, now.

However this inference is not necessarily the case. This is an implicature because it can be cancelled in some circumstances. For example:

6. House agent: The deposit for this contract is two hundred dollars. Can I ask you if you have got it now?

Customer: Yes, I have two hundred dollars now.

In this dialogue, the customer's reply does not have an implicature such as C. He or she might have three hundred dollars in his or her wallet.

3.2. I-Implicatures

In I-implicatures, what is explicitly expressed is supplemented by inferences which should hold true in normal circumstances. In other words, the information is inflated to a direction which is normally expected. They may be called informative implicatures. For instance, from 7,

7. He pushed the button. The curtain dropped.

We infer 8 in a normal circumstance,

8. He pushed the button. By this act, the curtain dropped.

This is a typical example of I-implicature.

3.3. M-Implicatures

M-implicatures are triggered by a manner of verbal expression. When a message is expressed in an unusual or complicated manner, it implicates that the situation depicted by it is not normal. For instance, if Tom does not say:

9. Julie sang "Yesterday."

but says something like 10:

10. Julie raised and lowered her tone of voice following the melody of "Yesterday."

It can be inferred that Julie's performance was terrible. By this roundabout manner of expression, the recipient also feels that the speaker wished to mock Julie by avoiding an open slander.

3.4. Particularized Implicatures

Although Levinson's theory is concerned with generalized implicatures, one example taken up in this paper is also related to particularized implicatures. So, let us explain these implicatures briefly. An example is in 11.

11. A: I wonder what time it is. B: A postman has just come.

In this dialogue, if A and B share the specific common ground that a postman comes at around ten o'clock every morning, it is possible for A to infer from the B's remark that it is around ten o'clock now. So this type of implicature is context specific.

3.5. Unintended "Implicatures"

In Grice's and Levinson's original discussion, the term "implicature" is used only when the recipient infers meaning as is intended by the sender. However, even when the recipient's inference is not what the sender intends, his or her inference processes from itself linguistic forms to the conclusions that are not different from those discussed in the theories of implicature. Therefore we employ the term "implicature" for these unintended inferences by the sender, as well as for intended ones.

4. Case Studies from Fukushima Disasters

After the accidents of the nuclear plants, various remarks were released from the spokespeople belonging to the government, the Tokyo Electric Power Company, or other organizations. However, some of these comments seem to be problematic viewed from the implicatures discussed above. In some cases, the sender's intended implicature was not communicated and/or an unintended one was inferred to by the recipient. In other cases, even if the sender's intended implicature is understood by the recipient, it does not succeed in improving the recipient's impressions about the situation or the sender; rather it might worsen them.

4.1. "~no yoona" (as though~): An Example of Q-Implicature

First, we will show some examples of Q-implicatures. In these cases, the sender's intention is not understood by the recipient as such, and the recipient might develop a negative impression about the sender's behavior.

12. (As for the conflict of domestic laws with international treaties,) We conducted the discharge of contaminated water because, after we had consulted the Nuclear and Industrial Safety Agency and the Nuclear Safety Committee, it was judged to cause no problem in the light of domestic laws. We apologize as though it had been conducted without notice.

In the final sentence of 12, the sender intends to bring about the following implicature:

13. Any situation which is worse than that the discharge was conducted as though without notice does not exist; the discharge was conducted with notice.

This implicature may be inferred by the recipient as intended by the sender. However, if he or she suspected in advance that the discharge had been actually conducted without notice, the recipient will have an impression that the remark is false. So the sender's apology is felt to be insincere. Furthermore it should be noted that, for the recipient who thinks that the act was conducted with notice, the phrase "as though" is redundant and purposeless. Rather, in order to make the point of apology clear, the sender should have said clearly as in 14:

14. We apologize that our prior explanation was insufficient.

As phrases which might bring about similar problems, we point out "kekka to shite" and "kekka teki ni" (as a result). For instance, 15 is a comment made by then Vice President Tsutsumi.

15. (The Fukushima Dai-ichi Nuclear Plant is in a serious condition due to damage from the tsunami. As regards its prior planning for avoiding the effects of a disaster, Mr. Tsutsumi, then vice president of Tokyo Electric Power Company, said as follows:) Our expectation was too optimistic, as a result.

The final sentence of the remark implicates 16 as a Q-implicature:

16. Our expectation was too optimistic as a result only. (i.e. Our expectation was appropriate when the plant was planned.)

Considering that to say 16 would be too much of an excuse, Mr. Tsutsumi might have left it to the inference of recipients by saying 15. However, even as an implicature, communicating 16 should still be regarded as an excuse. So, it is highly likely that, against his intention, this remark spoils the recipient's impression. If the sender intended to apologize, he should have said clearly, as 17.

17. Our expectation was too optimistic.

4.2. Examples of I-Implicatures

When a person connected with the central or a local government made an explanation about the influence of a large amount of radioactive substances discharged to the outside areas, he or she often used the phrase "tadachi-ni \sim nai (it is not directly / immediately the case that)."

An example is 18.

18. If you eat them, it is not immediately the case that they injure your health.

18 is an announcement made by Chiba Prefecture when spinach was shipped while suspension of their shipping was decreed. It can be speculated that, because it was announced a few days after the earthquake, the sender wished to rid people of anxiety of imminent crisis. However, it has been criticized that such a message was counterproductive; the sender's real intention was ambiguous and the recipient's anxiety could have increased. It is considered that implicatures arose irrespective of the sender's real intention. First, expression 18 has an I-implicature, as follows:

19. If you eat them, it is possible that they injure your health at some time or other in the future (i.e., at the point not referred to as "immediate").

In this case, the meaning referred to as "not possible immediately" is changed (inflated) into "possible some time or other" because when the former is literally expressed, the latter is expected to hold true in normal situations.

19 itself causes the recipient's anxiety; what is more problematic is that this implicature further triggers various implicatures depending on the recipient's background knowledge (particularized implicatures). For instance, inferences as follows might arise.

- 20. With the current dosage of radioactivity, some negative effects may emerge in the future.
- 21. If a dosage of radiation increases in future, some negative effect may emerge.
- 22. If the current dosage of radiation accumulates to a certain extent, some negative effects may emerge in future.

Depending on which was intended by the sender, the countermeasure we should take at present differs in a large way. Due to such ambiguities, when several people who have heard the remark exchange their opinions about how to cope with the situation, confusion may arise. Even for each of the individuals, his or her interpretation can fluctuate. These situations will increase the recipients' fears.

Even if additional explanations are made, the phrase "tadachini \sim nai" is so impressive that it will tend to be interpreted neglecting these ad hoc explanations.

On November 8, 2011, at the budget committee of the House of Representatives, Chief Cabinet Secretary Edano answered to Seiichiro Murakami, MP, that he had used the phrase "It will not immediately influence human bodies and their health" only seven times in 38 press conferences that had been held since March 11, 2011. However, this phrase was also used in official announcements by local governments as cited above; so people in general have an impression that this phrase has been used very often.

According to Asahi Shimbun (May 8, 2011), when the government used this expression, they intended to deny the direct influence of external exposure, such as burns and loss of hair. We cannot judge at all that this original intention was fulfilled. (Such intention is still unclear when we see the Chief Secretary's detailed explanations which were carried in the home page of the Cabinet dated March 21, 2011). If the person in charge had wished to explain the risk of external exposure, it would have been easier to understand if it had been said explicitly.

4.3. Examples of M-Implicatures

On the next day of the emergence of the earthquake, some confusion arose regarding whether seawater should be poured into the First Reactor of the Fukushima Dai-ichi Atomic Power Station. (It is reported that,) Mr. Haruki Madarame, the chairman of the Nuclear Safety Committee, made the following remark:

23. The probability of reemergence of nuclear criticality is not nil (zero de wa nai).

This remark was important because it was interpreted as 24,

24. The probability of reemergence of nuclear criticality still exists, even if it is low.

and the Cabinet was reported to have ordered the suspension of the pouring of water. (Actually, the head of the power station continued pouring at his own discretion, ignoring the order.)

Logically speaking, the use of "not nil" is not incorrect if the barest possibility of emergence exists. According to the press reports, Mr. Madarame used this phrase to convey this meaning. He says, "Scholars often use the phrase 'not nil' when the probability is completely nil. (May 26, 2011 Yomiuri online [9])

However, this expression can cause some misunderstandings. It is in a form of double negation denying "nil" (= "the lowest"). This roundabout form can be taken to be unusual by the recipient; he or she might make an inference that the situation is also unusual (Mimplicature). That is, this results in not only an (apodictic) inference that some possibility exists, but also various M-implicatures such as the sender has no confidence in his remark, or that he is trying to conceal some inconvenient information, and so on. According to Asahi Shimbun (dated May 24, 2011), Mr. Madarame explained in a special committee of the House of Representatives that, with this remark, he really intended to mean "nil, in point of fact." If so, in order to make this intention more explicit, he should have said

25. The probability is extremely low.

Or,

26. The probability is nil, in point of fact.

These expressions are simpler than the original one; nevertheless these do not mean that the sender has unjustifiably guaranteed that the probability is completely nil.

5. Involvement in the Situation and Verbal Expression

Although the focus of scant attention in daily life, the degree to which an individual can claim a right of involvement in a particular issue (whether it is his/her "territory" based on occupation or area of specialization) can lead to differences in expression (Kamio, 1990 [10]; Okamoto, 1995 [11], 2012 [12]). If senders have a weaker right of involvement than do receivers regarding a certain topic, they may add a preface indicating that their information is uncertain or insert an auxiliary verb indicating the use of hearsay or conjecture. This implies that they are not guaranteeing the veracity of the information.

For instance, a patient speaking to a doctor has a weaker right of involvement in the conversation than does the receiver. Even a well-informed patient might say,

27. I read somewhere that it seems like measles are going around these days.

The expressions "I read somewhere," and "it looks like," "it seems like," or "I hear" communicate that the utterance is based on hearsay and that the sender is uncertain.

Conversely, when someone with a stronger right of involvement is communicating with someone with a weaker right of involvement, these prefaces or auxiliary verbs rarely appear. If a doctor is speaking to a lay person framed information as it was framed above, s/he would give an impression of unreliability. In such cases, clear statements such as the following would be more typical:

28. Measles are going around these days.

Okamoto (1993 [13], 1995 [11], 1996 [14]) used a survey methodology to confirm that end-of-sentence expressions and prefaces are used differently based on the right of involvement.

In this context, people who ought to be responsible, that is, senders with strong rights of involvement, who issue uncertain statements communicate that they are irresponsible and unreliable.

The "Emergency Message on Stigmatization Regarding Radiation Exposure" (Involvement-1, see **Table 1**) issued by the Civil Liberties Bureau of the Ministry of Justice on April 23, 2011 is a typical example of this situation. The expression, "According to the press" is not reliable as it relays reliance on simple hearsay. Furthermore, the information source was not specified, which communicated low involvement.

This syntax not only reduces the statement to simple hearsay but also affects the apparent certainty of the content. In other words, the statements "According to the Reference No. Expression Speaker Source Involvement-1 Ministry of Justice, Civil According to the press and so on, we have heard some reports that Ministry of evacuees from Fukushima, where the nuclear accidents occurred, Liberties Bureau Justice, Civil were denied access to a hotel or to refuel gasoline. There also reports Liberties Buthat elementary schoolchildren were teased in a school to which they reau Webpage had evacuated. Although these might be caused by excessive worry of local inhabitants about the influence of radioactivity, it would be a violation of human rights to make distinctions due to groundless preoccupations or prejudices. Involvement-2 We have roughly confirmed that even if a serious accident occurs, Dr. Hideyuki Nakagawa, NHK Online, we can control it safely. For my part, I think. Chairman of the Fukui April 18. Prefecture Nuclear Power 2011 [15] Specialist Committee (Then-) Chief Cabinet Sec-Involvement-3 (Redacted) As a result, it is very regrettable that this is causing prob-Asahi Shimlems for evacuees. retary Edano bun, April 14, 2011 Equivocal-1 The criteria to judge the safety in reoperation of nuclear power plants Kansai Extended Associa-Asahi Shimare temporary while a regulative organization has not yet started. So bun, May 31, tion the judgment about safety is also temporal. As regards the reoper-2012 ation of the Ooi Nuclear Power Station, we firmly demand that the judgment is made appropriately as a limited one, with an assumption that it is temporal.

 Table 1. Examples of expressions inconsistent with the sender's right of involvment and equivocation.

press" and "there appear to be" convey less certainty than do "Newspaper reports state" and "there are," respectively. This causes an M-implicature and strengthens the impression that the statement is based on hearsay characterized by low involvement.

From the perspective of the general public, this phraseology gives the impression that the Ministry of Justice's Civil Liberties Bureau obtained their information through newspaper reports. It also gives the impression that, although they should be responsible for such problems, they are not addressing them seriously. The Civil Liberties Bureau should actively confirm and accurately describe the situation. If, instead, they cite newspapers, they should clearly state their source and use a form of expression that does not imply they resorted to hearsay.

Similarly, the statement issued by the Chairman of the Fukui Prefecture Nuclear Power Specialist Committee's on the re-opening of the Ooi Nuclear Power Plant (Involvement-2) also contained ambiguities. The statement regarding control in the case of an accident says that they have "all but" confirmed that they could control such a situation safely. Not only does the phrase "all but" indicate uncertainty, it also means "a rough estimate of the whole" (Digital Daijirin, Shogakukan). Furthermore, this phrase is often used colloquially in everyday conversation. Taken together, these characteristics strengthen the impression that the senders do not have a clear understanding of the situation. In one instance, it leaves the impression that the sender, who is the head of the public committee charged with confirming the safety of reopening the facility and thus has a strong right of involvement, is actually irresponsible.

If he had to communicate that it was not yet certain, it would be more appropriate to say,

29. We have approximately confirmed...

which is a more literal description of what has presumably occurred.

5.1. Rights of Involvement and Expressions of Apology

The above statements are examples of utterances that convey information, but right of involvement can also become problematic in other forms of verbal communication. For instance, it may be the source of problems in expressions of apology.

Let us first consider individual exchanges. For instance, if your action is responsible for a negative consequence experienced by someone else (e.g., accidentally bumping into someone or losing something you borrowed from someone), your involvement is strong. In such situations, it is normal to say "I'm sorry" or "My apologies." On the other hand, if you are not the one at fault and have low involvement, it is normal to say "That's awful," "I'm sorry to hear that," or "That's too bad."

It is unusual to confuse these situations. For instance, saying "That's awful" to someone whose problem you caused conveys a sense of irresponsibility and rudeness. Additionally, saying "I'm sorry" when you have no direct involvement conveys a sense of intrusiveness.

Such confusion is relatively self-evident in conversations among individuals. However, in the case of public communication, senders who should be involved make statements that suggest they are clearly unaware of the importance of these distinctions. As a result, the sender conveys a sense irresponsibility.

Then-Chief Cabinet Secretary Edano's comment in response to the problem of Prime Minister Kan supposedly stating that "the area near the Fukushima explosion will be uninhabitable for ten or twenty years" is an example of a statement that gives this impression (**Table 1**, Involvement-3). The problem with this comment is the apologetic expression "it is regrettable." Because the meaning of "regrettable" is "having regrets or thinking something is a shame when things do not go as expected" (Digital Daijirin, Shogakukan), the use of this expression by the sender is not communicating strong involvement in the situation. In other words, from a third-person perspective, this implies, "I have nothing to do with this, but it's a shame." For this reason, if this comment were made with the intent of apologizing, it did not accomplish its intention (a, b). Instead, it communicated the wish to avoid responsibility.

In terms of actual involvement, it can be assumed that Cabinet Secretariat Adviser Matsumoto misunderstood Prime Minister Kan's thinking, and Mr. Matsumoto's statement was later retracted (Asahi Shimbun, April 14, 2011, morning edition). Mr. Edano may have intended this statement as a commentary offered from the sidelines and may have felt that he was not responsible. However, these were circumstances that should have been of concern to the entire the government. From the perspective of the general public, Mr. Edano, who was in a position of supporting the Cabinet, had a strong right of involvement regarding this problem. For this reason, he conveyed a sense of irresponsibility.

Additionally, he used "as a result" in this statement. As noted above, "this is causing problems as a result" causes the Q-implicature that "this is causing problems only as a result (and nothing beyond this applies)." The impression left by this comment was made even more negative due to these two factors.

If he really intended to apologize for these problems and to disregard Prime Minister Kan's statement,

30. We apologize for causing problems would better a way to do so.

5.2. Need to Respect the General Public's Right of Involvement

Although the public generally wants their information delivered in an assertive tone, there are cases when this is not necessarily appropriate. For instance, the majority of specialists in radiation exposure are drawn from the field of healthcare. It is expectable that they would communicate from a specialist's perspective or from a position of a strong right of involvement when dealing with patients on a daily basis. However, some of the citizens interested in this problem possessed a great deal of knowledge obtained through reading relevant books and other materials. Some of these people may consider themselves to have a stronger right of involvement in this problem than do the specialists.

If specialists use their usual assertive tone toward these people with a high level of interest, the latter may feel that their own expertise is being ignored and mistrust the communication. This issue should have been given more serious consideration when communicating about the 3.11 disaster.

6. Equivocal Communication

Bavelas et al. (1990) [16] described communication that is ambiguous and can be interpreted in different ways as "equivocal communication." This includes messages that do not accurately reflect the sender's opinion, are unclear, or are not precisely directed to the receiver as well as questions that are not directly answered. In other words, this type of communication is ambiguous about whether "'I' am telling 'you' 'something' 'in this setting'."

One example of equivocal communication is the announcement by the Kansai Extended Association regarding the re-opening of Kansai Power's Ooi Nuclear Power Plant (Equivocal-1, **Table 1** [17]). This announcement has a complicated syntax. It is complex, and it is difficult to discern whether they are issuing approval. Until the Mayor of Osaka's later issued a statement saying that this was "essentially an approval," the meaning remained unclear.

When such complex expressions rest on obscure intentions, the persons involved in the policies often share a degree of ambiguity. For instance, Beyth-Marom (1982) [18] presented policy makers with verbal expressions indicating the probability of a certain event occurring, had them estimate that probability, and then found that they had a high rate of concordance. In other words, phrases that indicate the degree to which something is likely to happen, even those using expressions based on numerical values, implicitly suggest that the policy makers share a certain degree of uncertainty.

However, there is no guarantee that citizens see the meaning behind the verbal expressions used by policy makers. When this meaning is not shared with the citizens, misunderstandings occur.

Additionally, ambiguity leaves the impression that the sender is engaged in finessing, which suggests the possibility that "they are trying to hide something" (M-implicature), which may worsen the impression left by the message.

7. Illusion of Transparency

Social psychological research has elucidated a phenomenon known as the illusion of transparency, in which one thinks that others can read his/her mind. This phenomenon was demonstrated by an experiment (Gilovich et al, 1998 [19]) involving 15 cups filled with drinks, five of which tasted bad. Participants tasted all the drinks while an observer watched, but they tried not to let the observer know which ones tasted bad. The observers tried to guess the ones that tasted bad, and the results revealed that participants presumed that the observers were correct at a significantly higher rate than would be the case by chance. In contrast, the observers' actual rate of correct responses was no higher than the level of chance.

Why does this illusion of transparency exist? Gilovich et al. (1998) [19] proposed that people have an egocentric perspective and do not sufficiently consider the perspectives of others. In the aforementioned experiment, the participants did consider the fact that the observer could not access the subjects' internal state, including their senses or emotions. This led Gilovich et al. to believe that the illusion of transparency occurs when people wrongly judge that others can access their (the judgers') internal state.

The same can be assumed with regard to the risk communication and communications of apology cited as examples in this article. It is difficult for a sender to infer a receiver's perspective. For this reason, senders assume that receivers share their perspective. As a result, senders think they have transmitted what they wanted to transmit better than they actually have. They may further assume that the receivers understand the internal state they are trying to communicate.

The illusion of transparency means that the senders of information do not understand that the receivers do not understand their intent. Even when senders they do note that their intention has not been communicated, they often do not understand why it was not communicated or how to do so. Therefore, a precise explanation is not communicated to receivers in situations characterized by the illusion of transparency.

8. Conclusion

Working from a pragmatics perspective, we discussed expressions that may cause problems in risk communication and provided specific examples thereof. The illusion of transparency was identified as a factor that may exacerbate these problems. People do not transmit and understand communication using logic alone. The linguistic and psychological findings presented in this article should be considered when planning and engaging in communication during an emergency.

Acknowledgements

The research was supported by a Grant-Aid for Scientific Research from the Japan Society for the Promotion of Science, Japan, No.23530831.

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