Metaphor Language Processing: A Theoretical Review in Multidisciplinary Researches

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Abstract

There are explosion studies of metaphor in multidisciplinary research since Lakoff and Johnson published "*Metaphor We Live By*" in 1980. Linguists, psychologists, cognitive scientists, and neuroscientists have studied about metaphorical language processing since 1975. Many of experiments have done to find whether interpret metaphors are understood as automatic and as easy as literal? There are many complexities finding that opposed one in another. Many different theories of metaphor have been proposed yet we still have not come to general conclusions. This paper reviews all of the debate about metaphor, literal vs. metaphorical, since Grice and Searle proposed literal first hypothesis until recently researchers who reject it. Furthermore, this paper also tries to find answers on what actually makes metaphors become difficult to interpret.

Key words: metaphor; language processing; psycholinguistics; cognitive science; neuroscience

1. Introduction

Language has important role in human life since it is a means which human use to communicate one to another. Communication can be built if there is an understanding between the speaker and the hearer, in other word, between the source person and the target person. The main aim of communication is to send some ideas from the source to the target person. In order to achieve an agreement in communication, the meaning

is important and significant. Meaning is divided into two parts, literal meaning, and non-literal meaning. The literal meaning is based on the concrete reference or we can say the actual reference. Non-literal meaning is the meaning which is different from its concrete reference, or the more abstract things. There is a theory that said understanding non-literal meaning need a more complex process to understanding than the literal meaning (Glucksberg, 2003: p. 92). In other word understanding, non-literal meaning will be more difficult and take more time than understanding the literal meaning. Is it true?

When someone is angry with you and saying that *"you are a devil"*. Do you understand that expression directly? Or you need time to process it? I believe you will understand that expression directly and as easy as literal. Another example is when my friend facing the situation that he was in love with some girl. But, the girl seemed to ignore him. I said to him *"if you love her you must fight for her"*. Furthermore, I said to him *"you need to guerilla, attack her whenever you see her weak spot. Love is war, mate"*. My friend understood that expression directly. So, is it ok to say that understand figurative speech can be as easy as literal even as quickly as literal?

In different cases, figurative speech can be much more difficult. When In psycholinguistic class, my professor told us his story when he was at some street in Singapore. Some women came to him and offer him ice cream. One of them said to him *"do you want ice cream?"* But, the women did not bring any ice cream. The professor was a little bit confusing. And after some cognitive effort and look at the context of the situation, it became clearer that the women did not literally offer ice cream, but the women offer ice cream metaphorically which refer to sex. So, the professor asked the students in class *"do you know what it means?"* But most of the students in the class did not really understand what it means. But small numbers of students in class understand and

laugh through his story. Because the students know that women offer him sex. By that example it can be concluded that the Singaporean girl has a conceptual metaphor SEX IS ICE CREAM. The word ice cream was used to conceptualize sex. Thus, I knew that not all people have the same view in understanding metaphors. There are people that can understand metaphors as easy as literal and as quickly as literal and there are others who has difficult to understand metaphors. So, there must be a problem about how human process non-literal meaning, in this case, metaphorical language.

2. Literal vs. Metaphorical

What is the definition of metaphorical language? Metaphorical language for many years was understood as a language that uses words or expressions that is different from the literal interpretation. When the speaker or writer uses literal language, he or she is simply stating to the facts as they are. Standard thought believes that figurative language like metaphor only occurs in literature like poetry and prose. Yet, people are rarely aware of whether the words or phrases have literal, figurative or other types of meaning during ordinary language – they simply try to understand the discourse given the present context and their own personal goals (Gibbs & Coulson, 2006). This fact about ordinary language use raises questions, whether metaphorical language necessarily requires a different cognitive process to understand compares to the literal one.

One of the continuing difficulties with the psycholinguistics literature on metaphorical language understanding is that few scholars attempt to define the terms literal and Metaphorical (Gibbs & Coulson, 2006). Even there is a traditional assumption in many academic disciplines that literal meaning is primary. This assumption creates traditional believe that human language processor is designed for

analysis of literal meanings. Nonliteral or metaphorical meanings are secondary products, and dependent on some prior analysis of what words and expressions literally mean. This general theory contributes to the implication that nonliteral meaning will always take more time to process than literal meaning (Glucksberg, 2003: p. 92).

Glucksberg (2003) explained since Aristotle's era, most researchers hold non-literal meaning like metaphor required three-stage processes. The first step is to derive the literal meaning of the sentences. The second step is to assess this interpretation against the context of utterance. Because it will not make sense, so we take the third step: search for non-literal meaning that does make sense (p. 92). John Searle, a famous philosopher in 1970's believed that non-literal language needs to find whenever an utterance is defective if taken literally, look for an utterance that differs from sentence meaning" (Glucksberg, 2008). Like Searle, there are many metaphor theorists in various backgrounds such as contemporary philosophical, linguistic, and psycholinguistic writers who still hold this "literal meaning first hypothesis". For example, the expression "*Sam is a pig*" should be treated as similes (Sam is like a pig) in order to be understood. They believe, the literal meaning is defective whenever a rule of the conversation appears to be violated (Glucksberg, 2008). So, literal false meaning will be rejected or come to an alternative non-literal interpretation. This model poses two psycholinguistic issues. The First, literal meanings have unconditional priority and the second non-literal interpretations should be optional; they should be generated only when literal interpretation is defective. But most contemporary researchers, whether linguist, psychologist, cognitive scientist reject this hypothesis and suggest that people can understand the non-literal meaning as easily as identify literal meaning.

There is an experiment that proved that literal meaning first hypothesis is unreliable. The experiment conducted by Sam Glucksberg,

Patricia Gildea, and Howard B. Bookin (1982) rejected this three-stage process of metaphor comprehension. They found that literal meaning does not have unconditional priority and metaphor can be as easy as literal, and it is no optional. This finding was supported by "the parallel hypothesis" conducted by McElree and Nordlie (in Benedek et al., 2014: p.100) that suggest both meanings are processed concurrently. Similar results have been reported in regard to how people interpret many other forms of figurative language, including metaphors, idioms, proverbs, and different kinds of irony (Gibbs, 1994; Gibbs & Coulson, 2006). Most psycholinguistic researchers suggest that figurative language may be interpreted as readily as most nonfigurative discourse (Gibbs, 1994). Furthermore, metaphor comprehension is not depended on the failure of literal meaning, like any other kind of language metaphor comprehension is not optional. Instead, it is mandatory and automatic and metaphor could be as easy as literal (Glucksberg, 2003). But there are complexities issue of metaphorical comprehension, as Gibbs point it out that there are some studies that found people take longer to process figurative and metaphorical language than corresponding literal speech. This study was conducted by Blank in 1998, Schwoebel, Dews, Winner, and Srinivas in 2000, and Giora in 2002 (Gibbs & Coulson, 2006). The empirical findings between those studies are contradicting to one and another. This finding is contributed to the complexities of metaphorical comprehension which is metaphors could be as easily as literal but in some cases metaphors also more difficult than literal.

3. The Complexities Research on Metaphor

Gibbs (2013) described that metaphor is an important focus on several articles in "language science." Cognitive theories of metaphor had proposed several hypotheses about the cognitive reality of metaphoric thought and language that have been extensively studied by experimental psycholinguists. But the empirical finding in

psycholinguistic is quite complex. Not only researchers in psychology, linguistics, psycholinguistic, cognitive science, has even neuroscientists also participated in the study of metaphor. There is an experimental research in neuroscience that conducted by Argyris K. Stringaris, Nicholas C. Medford, Vincent Giampietro, Michael J. Brammer, Anthony S. David (2007) to investigate the neural substrate involved in processing three different types of sentence. This study aims to provide an answer whether literal, metaphor, non-meaningful sentences were processed in the same local area of the brain. It was influenced by the complexities of research of metaphor. There is a standard view which states that when reading a sentence, the first attempt is extracting a literal meaning and if this is found to be defective, consider an alternative interpretation of figurative language (Grice, 1975; Searle, 1979). But the empirical research on figurative language over the last few decades has found that literal and non-literal phrases follow the same time-courses and that readers cannot ignore figurative meaning in favor of literal interpretation (Gibbs & Coulson, 2006; Glucksberg, 2003; Glucksberg et al., 1982).

In their study, Stringaris, Medford, Giampietro, Brammer, & David (2007) used a novel cognitive paradigm and event-related functional related magnetic resonance imaging (ER-fMRI). Participant in this study asked to read either metaphoric (*some surgeons are butcher*), literal (*some surgeons are fathers*), or non-meaningful sentences (*some surgeons are shelves*) and had to decide whether they make sense or not. They demonstrated that processing of the different sentence types relied on distinct neural mechanism. This research found that activation of the left inferior frontal gyrus (LIFG), BA 47, was shared by both non-meaningful and metaphoric sentences. Furthermore, the activation of left thalamus appeared to be specifically involved in deriving meaning from metaphoric sentences despite lack of reaction times differences between literal and metaphors. This finding showed that understanding of metaphors involves the construction of an attribute category, a concept

that resembles object activation in the semantic system. They assign this to the ad hoc concept construction to open-endless of metaphoric interpretation.

Different from the previous studies that find the right hemisphere involved in metaphor comprehension, their result does not support the view that right hemisphere involved in metaphor comprehension that was suggested by Brownell (2000). Furthermore, Forgács, Lukács, & Pléh, (2014) who study whether right hemisphere processing advantage for novel metaphor also found that right hemisphere does not have an advantage in processing novel metaphor. They want to answer controversial findings in figurative language research that remains uncertain if the novel metaphors need a special kind of “extra-linguistic” processing and if the right hemisphere is necessarily involved in their comprehension as has been postulated by Brownell, (2000) and Coulson & Oakley (2005) that suggest metaphorical languages were processed in right hemisphere as the followers of RH Theory of metaphor.

Yet, in another research conducted by Benedek et al., (2014) found that metaphor production related to focal activity in predominantly left-hemisphere, specifically the left angular gyrus, the left middle superior frontal gyri – corresponding to the left dorsomedial prefrontal (DMPFC) cortex – and the posterior cingulate cortex. Moreover, the brain activation in left anterior DMPFC and the right middle temporal gyrus was found to linearly increase with creative quality of metaphor responses. This finding support Brownell (2000) idea which said that metaphor is the creativity that processes in the right hemisphere.

These findings were contributed to the complexities research on metaphor and also raised a question about metaphorical comprehension that has been debated for many years. This debate is to answer a question about how much effort does it take to interpret a verbal metaphor? The

motivation for this subject is because of the assumption of Grice (1975) and Searle (1979) that metaphorical language is processed after some literal analysis of statement has been interpreted and rejected. But the result is different in psycholinguistic research of metaphor which found that there is different in time to take for people to understand metaphoric statements (see Gluckesberg et al 1982; Gluckberg 2003) and find that metaphor can understood as quickly as literal and in some cases even more quickly than literal paraphrases (Gibbs, 1994, 2013; Gibbs & Coulson, 2006; Glucksberg, 2008).

To conclude those findings (Gibbs, 2013) explained that psycholinguist researchers should not assume their findings will eventually settle the ongoing empirical controversy. Although significant research supports some claim of cognitive linguistics, especially its advocacy of conceptual metaphor theory, there are also contradictory finding along with several alternative theories of metaphor not seriously considered by cognitive linguists. Gibbs suggested both linguist and psychologist should not assume that single theoretical model will account for the complex empirical finding because all metaphoric behavior depends on the people being studied, the specific metaphor language employed as stimuli, the explicit experimental task, and the method used for assessing metaphoric comprehension. People's in-the-moment metaphoric behavior emerges from the interaction of multiple factors as part of the human self-organizing process. This perspective has several implications for how linguists and psychologists conduct and interpreted the result of their empirical studies.

4. What Makes Metaphor Easy and Difficult to Interpret

One of the difficulties in the study of metaphor is to find an answer what actually make metaphor easy and difficult to interpret. Does it type of metaphor? Or perhaps the novelties of expression that create difficulty

in comprehend metaphorical meaning? To answer that question we should mark that metaphor is not actually the matter of language yet it matter of thought. Metaphor is far from being a mere linguistic device, and it is a mean that helps to shape the way we think and act (Lakoff & Johnson, 2003). If we understand that metaphor as the way we conceptualize things, to understand one thing in terms of the other (Lakoff & Johnson, 2003), then we could understand that the metaphor constructs our sociocultural knowledge and the novelty of the expression itself that contribute the difficulty of metaphor. Furthermore, this novelty depends on the sociocultural knowledge of the target person or the hearer. For instance, the metaphor ice cream that refers to sex is understood by a few students in my psycholinguistic class.

Another problem is because some people did not know that expression is a metaphor. Most of the people know that metaphors are formed by *A is B*. *A* is the topic (tenor) where the subject of metaphor or the intended idea to be expressed, *B* is the vehicle where another idea by which the tenor is being described and ground are the similarities and/or involved or the basis on which topic and vehicle could be thus put together (Goatly, 1997: p.7). Yet in implicit metaphor, the formulation of *A is B* does not always come together. In the implicit metaphor, the topic does not occur with the vehicle but it could be seen by the intended meaning. Ice cream is the concrete reference (vehicle) to describe another thing (sex). If we see the expression as metaphorical we could judge that Singaporean has this conceptual metaphor SEX IS ICE CREAM. Sex is taboo express. So, the Singaporean girl used ice cream because she used the domain ice cream to describe sex, like sweet, enjoyable, most of the people like it, and maybe she visualized doing sex like eating metaphor. That happened because metaphors are embodied in human experience (Lakoff, 1987; Lakoff & Johnson, 1999) and they are varied in a different culture, language, even different human experience.

5. Suggestions

There are many findings in metaphorical language comprehension. One of the factors is psycholinguistic experiments that study and compare the literal and metaphorical generalize that all of the metaphorical expressions are somehow equivalent in the degree of their metaphoricity. Furthermore, they did not consider the other variable such as the sociocultural knowledge of their subject. Yet the researcher somehow continues to assume that the “literal” and “metaphorical” language they examine empirically is the same variable that other researchers investigate in their respective experiments (Gibbs & Coulson, 2006). These complexities in metaphorical language processing should be seen that there may not be a single theory or model to explain how all aspect of metaphorical language comprehension is understood.

So, how should we deal with this emerging empirical situation in metaphorical language comprehension? How should linguists, cognitive scientist, and other scholars, in turn, hope to rely on, or contribute to, ongoing research on metaphor? Here, I suggest linguists, psychologists, cognitive scientists, neuroscientis and other researchers that interesting in this field should recognize the true complexity of human metaphor experience by not drawing simplistic conclusions from the results of any one set of the findings in metaphor comprehension.

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