

Metaphorical Thought in Chinese Children's Learning Process

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Abstract

In the contemporary theory, the view that metaphor plays a fundamental structural role in organizing our conceptual system, rather than serving a deviant rhetorical effect, is now generally accepted. Therefore, this paper will take the contemporary view to retrospect the researches in children's use of metaphor, and explore Chinese children's metaphorical thoughts in their learning process.

Key words: Children's metaphorical thoughts; Chinese children's English learning; Consciousness

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INTRODUCTION

In China, with the purpose to promote the process of learning among children, more and more researchers tend to unfold the essence of learning and to seek for more appropriate strategies for teaching and learning. However, some of them usually ignore one important factor—metaphor, or metaphorical cognition, which plays a dominant role during the understanding between the known and unknown world, especially among children.

Children exist in a relatively naïve situation, and their means to explore the “new” world is mainly through metaphor (Lakoff & Turner, 1989). And a plausible conclusion to be drawn is that children are found

more competent to produce appropriate metaphors than adults, though they sometimes seem prone to outrageous comparison (e.g., quite as an eye, happy as a shirt), and their metaphorical cognition seems more active than adults'. So, in the learning process, children assimilate new information to simple, pre-existing notions, and modify their understanding in light of new data (Strommen, 1992). In one word, for children metaphorical cognition is not only an important way to approach the new “world”, but also a typical characteristic in their learning process. Unfortunately, in China such researches into the demonstration of metaphorical thoughts in the process of children's learning are not enough.

1. RESEARCHES IN CHILDREN'S USE OF METAPHOR

Much of the research on children's use of metaphor over the last 40 years has been within the context of stages of cognitive development (Asche & Nerlove, 1960; Billow, 1975; Winner, Rosentiel, & Gardner, 1976). Research has been inspired, generally, by interest in the nature of creative thought (Bruner, 1986; Gardner, Kirchner, Winner, & Perkins, 1975), and specifically, by how comprehension of metaphor is related to ideas of cognitive development (Pollio, 1974; Vosniadou, Ortony, Reynolds, & Wilson, 1984; Waggoner & Palermo, 1990).

1.1 Researches on Child's Use of Metaphor

1.1.1 Asche & Nerlove's Research

In their seminal study, Asche & Nerlove (1960) explored children's comprehension of descriptive “double function” terms such as “hard”, “deep” and “bright”. A researcher talked with each child in an elementary school and showed each child a number of objects. From among an ice cube, a wooden block, a branch, a powder puff, and a cube of sugar, the child was asked to pick an object that

exemplified the word "sweet". Then, the child was asked to name objects that the term describes to find out whether the child grasped the physical properties. In the next step, the child responded to the question, "Are people sweet? Do you know any sweet people?" Asche and Nerlove (1960) found that "sweet" was the only double function attribute that children could talk about. The older children from the school "showed evidence of an increase in the use and understanding of the psychological sense of the terms" (p.52). These children understand the concept of dual function in comments, such as "Hard things and hard people are both unmanageable."

1.1.2 Billow's Study

Billow (1975) conducted studies with 50 boys, ages 5-13, recruited randomly from the files of a Long Island, New York, yeshiva. In the first phase, a researcher presented the children with groups of metaphors: "Hair is spaghetti", "The pond is his mirror", "A butterfly is a flying rainbow" (Billow, 1975, p.416). Each boy was given two presentations of the sentences, one verbal and one pictorial. In their answer, the youngest children (age 5-7) transformed the relationship of metaphorical comparison into other types of relationships. One 5-year-old, for example, understood the sentence "The branch of the tree was her pony" (p.416) to mean that the pony carries heavy things like the branch does. The same child explained the statement "A flower is a grounded bird" (p.416) in terms of a contiguous relationship: "A bird is on the flower and the flower is on the ground" (p.420). To a child of 7, the metaphor "The stars are a thousand eyes" (p.418) became a statement of cause and effect: "It means, they light up all over, they make you see in the dark" (p.420).

1.1.3 Winner et al.'s Study

In their study, Winner et al. (1976) looked at processes of comprehension. One hundred and eighty children between the ages of 6 and 14, evenly divided between girls and boys, were selected at random from their classroom. The study had two parts. In the first part, the researcher read a story to the children and asked, "I want you tell me what you think the story means?" In the second part, the children were read a story and were asked to choose among four different things "that some people think the story might mean" (p.292). Of the 16 metaphorical sentences embedded in each test, eight were cross-sensory (e.g. "her perfume was bright sunshine") (Gardner et al., 1975). Eight were physical-psychological (e.g. "the prison guard was a hard rock") (Asche & Nerlove, 1960). Winner et al. (1976) found that the youngest children responded with magical interpretations; that is, they offer "a paraphrase...that maintains the literal meaning" (Winner et al., p.293), such as "the king turned the prison guard into a rock" (p.293). The older children were more likely to make genuine metaphorical choices, such as, "The guard was

mean and did not care about the feeling of the prisoners" (Winner et al., 1976, p.295).

1.1.4 Vosniadou & Ortony's Experiment

Vosniadou and Ortony's (1983) found that young children discriminated among literal, metaphorical, and anomalous similarities of 10 nouns embedded in statements read to them. Vosniadou et al. (1984) looked more closely at the children's processes of thinking and talking about the metaphors presented to them. Ninety children (half of them girls and half of them boys) from a nursery and an elementary school in rural Illinois took part in the study. The children enacted the endings to stories presented to them in which the choices of outcomes were stated in metaphorical terms. The children acted out the meanings they made of the statements. "Acting out the entire story forces children to process the story's content, making it more likely they will use the content to understand the metaphor" (Vosniadou et al., 1984, p.1591). The authors found that the children's comprehension was not dependent on the presence of a metaphorical statement, but rather was determined primarily by the nature of the story context in which the ending were given. Second, their comprehension depended on the extent to which words, especially verbs, were literal ("Billy was a child hiding the cookies") or nonliteral ("Billy was a squirrel burying the nuts") (Vosniadou et al., 1984, p.1591).

1.1.5 Waggoner & Palermo's Statement

Waggoner and Palermo (1990) challenged the conclusion that young children do not comprehend psychological metaphors. Instead, they focused on children's perceptions of emotional states. The authors believed that children as young as 3 or 4 would be familiar with feelings such as sadness, anger, fear, happiness, love and hate. They presented 48 metaphors in 12 stories, contrasted in pairs. Children performed better on what the authors considered negative emotions, such as anger, sadness, fear and hate, than they performed on metaphors for positive emotions, such as happiness and love. The children differentiated among incorrect metaphors and chose a figurative answer for their psychological answer. For instance, although the researchers considered both "sorrow" and "fear" to be incorrect ways to explain the metaphor "Joe is a snorting bull" (p.158), the children did not treat the choices equally. They were more likely to interpret the metaphor as representing fear. The authors conjectured that the children were thinking of the fear they would experience when they facing a snorting bull, rather than considering anger as an attribute of the bull.

Waggoner and Palermo (1990) found that the anger-fear pair was the most difficult one for children of all ages to understand, while love-hate metaphors tended to be the easiest. The anger metaphors contained words or concepts that children found frightening, such as "buzzing bees", "stinging words" and "a bucking horse". The children

interpreted a passage about a boy feeling like a sinking boat to mean something fearful, much as they responded to the snorting bull metaphors.

In the Waggoner and Palermo (1990) study, the children related what is familiar—their conception of feelings they would have a difficult situation—to what is unfamiliar (a sinking boat and a snorting bull). Their interpretations are direct and concrete, and centered in their immediate experiences. In the more difficult anger-fear pairs, concrete metaphors were easier than abstract ones. Concrete metaphors make the strange familiar. To say that one dinosaur was the height of 14 men standing on one another's shoulders would be comprehensible to most children. Children need such comparative attributes to comprehend a metaphor.

1.1.6 Gallas' Discovery

Karen Gallas (1994) found that her 1st-grade students, given free rein to explore such questions as “What is the beginning of the nature”, could create their own metaphors and make their own connections between the familiar and the strange. Watching and listening to children's conversations, rather than prompting them, could reveal a new understanding of children's use of metaphors (Gallas, 1994; Winner, 1982). A teacher in this situation must be patient, for without a doubt, the children's exploration process is a scattered one. “To the adult listener, the trains of the children's thought are difficult to follow and give the impression the talk is going nowhere” (Gallas, 1994, p.105).

She also gave some suggestions on teaching that the object of teaching is to engage as many children as possible in observing, experimenting, talking and writing about the world. That process must begin with their deep emotional attachments and focus, as children naturally do, of the surprises in nature. The teacher focuses less on the answer the children come up with than on the struggles they undergo together to create arguments that offer evidence from their experience.

1.1.7 Zhou Rong's Experiment

In China, the researches, especially the experimental ones, on children's use of metaphor are few. Here take Zhou Rong (2003)'s experiment on children's metaphorical competence on “Time” as an example. This experiment includes two aspects, the first one is the production stage, in which 140 children from primary school are given an incomplete sentence and asked to fill in their own answer according to their understanding on the concept “Time”; the second part is the comprehension stage, in which two college teachers respectively give scores to each sentence in order to study the development on children's metaphorical competence on “Time”. The result finds out that children's competence to produce and understand metaphor on “Time” is developing with the increase of their age; children master different types of “Time” metaphor in different stages; the “personification” and

“space” metaphors are mastered earlier than abstract ones, such as “changer”, “effect”, “inspector”, etc..

1.2 The Conclusions and Questions of These Researches

Two questions guide the literature on children's use of metaphor in their learning: How is metaphorical language used in the process of learning? And what are the implications for teachers in helping their students to use metaphorical language and thereby build knowledge of their world?

Through the review of many researches, the answer for the first questions is shown: The metaphors that younger children use are based on physical links, rather than conceptual and psychological ones (Winner, 1982). As children become more expert in reading and writing, and as they grow older, their use of spontaneous metaphors declines (Wagner, Winner, Cicchetti, & Gardner, 1981; Winner et al., 1976). Production and comprehension of metaphor may be related to the nature of conversation between children and the teacher (or other adult). That is, children's exploration and understanding of metaphor are diminished by teachers and other adults (Gallas, 1994; Winner, 1982) who may look for specific meaning of metaphorical language. Elementary school students are able to grasp functional and concrete metaphorical polarities well before they can explain their specific meaning (Asche & Nerlove, 1960; Ciccone, Garder & Winner, 1980; Winner et al., 1976). Children as young as 5 and 6 can use concrete, functional metaphors, even explain their choices (Waggoner & Palermo, 1990). Comprehension of metaphor is related to the context of the metaphorical statement and prior knowledge (Ortony, 1979), and to the context of the research situation itself (Vosniadou et al., 1984).

And for teachers, these above researches also point out that teachers may not be expert in creating metaphors, but they need to speak metaphorically in order for students to learn to use metaphors (Vosniadou et al., 1984). Teachers can model their thinking proceeded in figuring out ways to interpret what they hear, read, and see. Awareness and the use of metaphor are cumulative. Practice in creating and using metaphor in conversation and writing leads to new questions and perspectives. Teachers can promote an environment where children are free to explore the new “world” through metaphor (Gallas, 1994, p.109).

Based on such conclusions, here appear two questions: one is that most researches are action-oriented, but lack the analysis of children's psychological factor – metaphorical characteristics in children's thought. Second is that most of the researches mentioned are under foreign researchers' direction, so to some extent, in Chinese children learning process, can these researches maintain the same result? With these questions, in the following section, the paper will analyze children's metaphorical thoughts in three stages.

2. CHILDREN'S METAPHORICAL THOUGHT IN THREE STAGES

In the field of studying children's psychological development, Jean Piaget outlines the evolutive course of intellectual development of a child through various stages. He pinpoints the following four stages:

- A: Sensorimotor stage (from 0 to 2)
- B: Preoperational stage (from 2 to 7)
- C: Concrete operational stage (from 7 to 11)
- D: Formal operational stage (from 11 to 16)

In this outline the most critical stage for the first and second language acquisition appears to occur at puberty, during which a person becomes capable of abstraction and formal thinking, which transcend concrete experience and direct perception. The transition from concrete to formal operational stage is crucial for the second language acquisition. And also in this period, the characteristics of children's metaphorical thought present different colors.

In this section, with the purpose to effectively analyze Chinese children's metaphorical thought in a more limited period (in primary school), the first thing to do is to divide children into three stages:

- A: Preschoolers (from 2 to 7)
- B: Low Graders (from 7 to 9)
- C: High Graders (from 10 to 12)

2.1 Metaphorical Thought in Preschoolers

With the development of language competence, children begin to think representatively, which means to internalize sensory schemas into representative ones. But at the same time, this internalization only focuses on the static-state while the relationship between the reason and the result can not be explored. In other words preschoolers can not proceed the genuine logic thinking, so although metaphorical thought appears during this stage, they are unconscious of the lack of the knowledge. These metaphorical thoughts not only appear in the language but also in daily life of preschoolers. And in the following part, three important characteristics (Symbolism, Animistic Thinking, Originality and Absurdity) will be discussed respectively.

2.1.1 Symbolism

Since preschoolers do not accept the formal education, their rational and logic thoughts still stay in the blank. This situation shares similarity with the childhood of human being: no abstract concept, no logic idea, the common understanding based on simple perceptibility. Basically speaking, such thoughts are mysterious, irrational but metaphorical. And symbolism is one feature of these metaphorical thoughts.

In preschoolers' actions, especially in their games, symbolism is easy to seek: a bamboo pole as a horse, the stretched arms as a plane, the soil as a missile, etc. No matter in eastern or western country, children at the age of 3 like to play Family Games, in which they act as

doctors, parents, teachers or kids. Such games require little, sometimes even nothing, but their interests. They live in their own world without the limitation between the subjective and the objective. According to Piaget's theory, at this moment children have already assimilated the reality into their own cognitive model and are willing to continue these games. But with the increasing age and knowledge, children adjust their psychological schema with the rules of the physical world. Until the first or second grade (ages 6 or 7), they realize the difference between their fictitious world and the actual situation, so their interest withers gradually.

Adults master this symbolic characteristic of preschoolers and make use of it to achieve an advisory goal. A Chinese mother, for example, feeds her 3-year-old son and asks him to perform as a tiger. The son feels excited and opens his mouth like a tiger, then mother puts the food into his mouth. In America, there also exists the same game named "Plane-into-the-mouth" when adults "cheat" the children to eat the food. In the two examples, the mouth is symbolically regarded as a tiger or a plane by children themselves, and this metaphorical cognition is employed by adults.

2.1.2 Animistic Thinking

As explained above, children still can not shake off the bondage of the subjective world and can not recognize the world through different interrelations, so they only focus on their own concepts and understandings which, in some respects, divorce from reality. This atmosphere is called "Egocentrism" by Piaget, which refers to an assimilation from the nature into children's schema or an equivalence between the concrete world and wishful thinking. Piaget thinks that children's ego-centered-consciousness is the source of Animistic Thinking, in other words, children are inclined to receive the whole world as an organization with life. A 3-year-old boy who watched the sunset with his mother, for instance, would say: "That sunshine's getting sleepy." (Berk, 1994, p.236) In another example a 4-year-old girl asked her father whether the ocean stopped to rest. When she was told that it would never stop, she doubted this answer and said, "Even when we go to bed?"

One point should be paid an attention that when children employ such animistic thinking they are unconscious and just follow their psychological direction. And to trace its origin, it is common to all human being's early thought. Among the primitive people, the roads were endowed with the life and if they were abandoned they "died". This illusion, with the lapse of time, would be substituted by a more rational cognition but in Carl G. Jung theory, this "Collective Unconsciousness" was inborn and identical in all men and thus constitutes a common psychic substrate of a suprapersonal nature that is present in every one of us. In other words, children's and primitive people's performances unfold the deep layer

of human being's nature, which definitely contributes to the research of the adult's ability.

2.1.3 Originality and Absurdity

Children can create metaphors to express their ideas as early as the age of 3 (Gentner, 1983). Preschoolers' creation of metaphor meets the need of the communication because their mastered vocabularies are very limited, so metaphor becomes an effective method to convey their thoughts. Additionally, these metaphors are original, even humorous when heard firstly. A little child in a kindergarten shouted he saw a "fish leg" in the bowl while in fact it was a fish bone; a 3-year-old child felt stomachache and said: "Here is a fire engine in my tummy." (Winner, 1998); one girl thought the peppermint candy in her mouth was like "a draft in the mouth"; another boy after eating up the food said: "It just ran down the little ladder to my stomach." (Hatch & Brown, 2001, p.100). Therefore, generally speaking, since children are lack of enough words, their choices of words to suit different situations seem difficult, but their metaphors become fresher than adults'. Through the comparison of 4-year-old children with 20-year-old college-students, Gardner and Winner affirm the same conclusion further.

Another aspect in the comparison indicates that, although children can produce original metaphors, some metaphors are also irrational, sometimes even ridiculous; while college-students can possess traditional and reasonable metaphors. Thus it can be seen that children are born with an ability to master the similarity in chaos, but such an ability is short of rational support, cultural influence and scientific comprehension, so their use of metaphors seem absurd and unacceptable.

2.2 Metaphorical Thought in Low Graders

Piaget's third stage in children's development is called "concrete operational stage", whose span is from 7 to 11 years old. In China some psychologists also investigate this question about when children turn a corner in the development of their thought. Chosen from various viewpoints, the fourth grade in primary school is decided as the turning-point in this chapter and children with the ages (7 to 9) are included as the Low Graders, with the ages (10-12) as the High Graders.

At the age of 7 children's brain weight is 1,280 grams, then increases to 1,350 grams until the age of 9. Although the speed of increase is not rapid, the brain accelerates its qualitative changes, the nerves grow closer and much of the cranial nerve circuit take shape. Children's egocentrism and animistic thinking start to decline, then because their response to the second signal system (languages and words) is not well equipped, the ability to imitate becomes stronger, to think on the abstract concepts keeping previous condition. So Low Graders tend to create metaphors consciously, with the characteristics of visualization and personification.

2.2.1 Consciousness

The most distinctive feature of Low Graders, comparing with the preschoolers, is that they are conscious to employ metaphors. As above mentioned, preschoolers, like the primitive people, their metaphorical thoughts are unconscious, because the identity, similarity and difference among all kinds of things seem too sophisticated to understand. What is more, preschoolers must face their poverty of language words, so they have to make use of metaphors to achieve their communicative goals. In the low grades in primary school, however, children's recognition of the around-world inclines to be more objective, and with the reception of the formal education, they are asked to use rhetorical means including metaphors to modify their homework. Then metaphors' appearance is with consciousness.

On the development of language, Frye and Buck both have penetrated argument that metaphors are the first stage in the development of language, the main feature of which is the mixture of the perceiver and world, human being and the nature. "Arnold is a lion", for instance, the speaker is not clear to distinguish Arnold from animal (lion). Afterwards similes break out the tendency to replace metaphors—"Arnold is like a lion" is used more frequently than the metaphorical expression, which definitely is the evidence to prove that children begin to exhibit their metaphorical competence on purpose.

2.2.2 Visualization

In this stage Low Graders' logic thinking ability is not mature enough to comprehend all abstract concepts, and they maintain their understanding based on the concrete and perceptible subjects. It seems rather puzzling for them to grasp more abstract parts in concepts or the specific property of one kind of subjects. When encountering abstract words they turn to the audio-visual aids; when encountering mathematic problems they can solve them by using concrete objects. This is the reason why Piaget calls this stage as "concrete operational stage". Naturally, Low Graders are expert in controlling the concrete characteristics, so their metaphors speak for it. In Millard Hawk Primary School of America, when visiting a Dinosaur Museum a second-grade child announced that aptosaurus (one kind of dinosaur) had teeth like a garden rake, another child refuted that it was pencil-like. In china one pupil described radish as:

(1) 萝卜的根像老爷爷的胡子, 它的身体圆圆的, 真像一位小朋友的脸蛋。

(The root of radish is like grandfather's beard, its body is round like one child's face.)

These above examples have the foundation on the similarity of outer-form, color or function, which are the most obvious features in children's eyes.

2.2.3 Personification

Personification is a rhetorical decoration that Low Graders are adept in, so Low Graders continue to imagine the outer

world as an organization with life, even with joy and sorrow. Although there is no research on children's Life-Consciousness, Chinese researchers (Zhang, 1998) once carried on some investigations on Death-Consciousness among children in the kindergarten, and obtained an conclusion that (a) At the age of 3.5 nearly all children hold that human being will not die, nor the animals and plants; (b) At the age of 4.5 to 5.5 children manifest strong egocentrism, thinking that grandparents will die but they themselves never; furthermore, everything they like will not die but everything they do not like will; (c) Until the age of 6.5 most of children understand the concept of death by admitting that everyone including animals and plants will die and never wake up. Basically speaking, children finish their understanding process on death at the end of kindergarten. Since "Life" and "Death" are two closely related concepts, if children do not have enough knowledge of "Life", they should not have a comprehension on "Death". Therefore, the conclusion is put further that children themselves already master the concepts of "Life" and "Death" before the entrance of the primary school. Then Low Graders are conscious to employ personification, especially in their compositions.

Here are two wonderful examples. The first is a Chinese three-grade pupil's description of the garden after the rain:

(2) 花园里的植物全身挂满了水球，仿佛洗了一个澡，芭蕉树的一只胳膊也被今天早上的大风给折断了。瞧，她的脸上还挂着伤心的眼泪呢！

(All the plants are hanging with the water-balls, as if they just have a cool bath; one banana tree has one broken arm by the wind of this morning, and what painful tear there is on her face.)

The second are a few sentences taken from a composition named "The coolest dog on earth" by an Australian one-grade pupil in Elanora Heights Primary School:

His eyes popped out of his head. He hopped out of his car and ran as fast as he could to the love of his dream.

Although eastern and western cultural backgrounds train two diametrically different passages, Low Graders are gifted with talents of using the personification so they can coin vivid and suitable figures to describe plants or animals.

2.3 Metaphorical Thought in High Graders

High Graders, from the age 10 to 12, almost equally belong to Piaget's Formal Operational Stage, because children's brain weight has reached the average level of adults' (1,400 grams), and in the cerebral cortex the complexity of the inter-structures and functions has been proceeding, with the increasing ability on association, inference, generalization and judgment. As discussed above, the fourth grade in primary school is the critical stage, after which children gradually cast off the yoke

of junior thinking mode (thinking in term of images) and shift to abstract logical thinking mode. Considering their metaphorical thought, High Graders still keep some characteristics of Low Graders, such as visualization and personification, but their ability evolves to form metaphors abstractly and systematically.

2.3.1 Abstract Metaphors

Low Graders are conscious to employ metaphors, but since their logical thinking and inference ability are still beyond the maturity, they can not establish the essential relationships among various concepts. In other words, their metaphors are limited into the area of "outer" features or functions. With the abstract thinking being perfected day by day, High Graders' metaphorical thoughts assume a new aspect. Zhou Rong (2001) once investigated children's metaphorical competence on "Time" metaphors, the result of which showed that such a metaphorical competence is developing with the increasing age of children: in the first and second grade in primary school, children do not possess this competence; the third grade is an important period to form it; until the sixth grade such a competence has been completed; and in the first year of junior middle school children's conceptual metaphorical system takes shape. Zhou Rong explained that "Time" is an invisible and untouchable abstract concept, so our understanding about it is fundamentally metaphorical; it is often alluded as 11 concepts that include **the valuable objects, the space, the state, the easily-lost objects, the effect, the reformer, the inspector, the fluid, the medium, human being, the dominator and the dominated**. In the 11 Time-metaphors, "Time is the space." and "Time is human being." are produced initially at children's minimum age while other abstract root metaphors such as **the reformer, the inspector, the effect** etc. seem too sophisticated for Low Graders to comprehend but seem appropriate for High Graders whose abstract thinking ability develops rapidly.

High Graders can already draw support from the concrete things to describe abstract senses or relationships. Here comes an example:

Relief washed over me as I heard this terrifying creature scurrying away.

"Relief" of the tense is the water washing over the author—this metaphor focuses on three lays of similarities: a) the speed: fast; b) the pattern: from the head to the feet, all over the body; c) the outcome: to feel comfortable. This series of similarities reflect High Graders' maturity on the using of the abstract metaphors.

Besides this, High Graders' improvement of metaphorical competence also depends on the increasing amount of the vocabularies. They master more and more idioms, folk adages and words with metaphorical meaning, most of which express abstract concepts through concrete actions and images. When utilizing such

idioms and fables, High Graders commonly realize the metaphorical process by emphasizing them with quotation marks. However, when employing some metaphorical words, High Graders ignore the existence of them because words' metaphorical meaning is already internalized. That is to say, High Graders begin to make use of metaphors unconsciously. Let us observe two examples from two pupils of fifth grade.

(3) 两种截然不同的声音混合在一起,细细品味一番,还真有意思。

(Two kinds of voices are blended together. To taste them carefully, it is rather meaningful.)

(4) *I want to run, but I am stuck to the floor. I want to shout for help but my voice is frozen.*

In sentence (3), "voice" is metaphorized as "food", the former has no shape or flavor, but the latter has both. Why creates such a metaphor need the explanation through two aspects: the first reason lies in the similarity between them (one of the characteristics of "voice"—sweet voice can make people comfortable, which also accords with the contribution of "food" to human being); the second one focuses on this pupil's deep understanding about "混合(blend)" and "品味(taste)", both of which construct a bridge to make this metaphorical sentence natural and fluent. Similarly, in sentence (4), the state of keeping motionless is "stuck", keeping voiceless is "frozen". These apt metaphors just reflect High Graders' competence to explore the similarity among different things and to employ suitable words to finish the metaphorization. And the basic reason for this realization absolutely hinges on the full development of High Graders' abstract thinking mode.

2.3.2 Systematicity

Before analyzing High Graders' ability to employ metaphors systematically, here is a passage whose topic is the Spaceship Earth, written by a sixth-grade pupil in Elanora Primary School in Australia.

(5) *Our Earth is a spaceship—it's very precious. We should all protect this by all being crew not passengers... Why? Because working helps clean the Earth like a street sweeper and garbage men. They are all members that keep spaceship alive... Crew members remember to help co-operate and be nice to other crew members. It may be a bit hard because not everyone likes each other. You can help by helping to not litter and put yucky things down your sink. Spaceship Earth will never disintegrate if there are always crewing, not passengers.*

In this passage, the relationship between the Earth and human being is modified as one between a spaceship and its crew, and based on this metaphor there is a conclusion that human being should regard himself as one part of the Earth and co-operate to treat it properly. High Graders, comparing with Low Graders, exhibit a systematically metaphorical cognition. As in the passage (5), this pupil not only creates an appropriate

metaphor—"the Spaceship Earth", but also highlights their connection by inference.

Basically speaking, High Graders' metaphorical systematicity reflects their maturity on the Conceptual Metaphor System (CMS). CMS is a metaphorical cognitive system possessed by the whole community and it is also a kind of potential cultural feature that roots in everyone's thoughts. Cottfried (1999) did an experiment to test if children can understand one conceptual metaphor—"The brain is a container." The result shows that at the age 4 to 5 children are not clear what is the function of the brain and think animals can think even without the brain; the first-year pupil believe the brain can think but there is no thought or memory "installed" in the brain; the third-grade pupil begin to think that the brain is like a container and if it is transplanted there lefts no thought or memory. Judging from this, the process for children to comprehend the conceptual metaphor "The brain is a container" consists of conscious learning (teacher or adult's teaching etc.) and unconscious acquisition (self-experience or self-accumulation etc..)

CMS, however, is huge system that ranges from the easy extreme to the difficult one. Nowadays it is mysterious to determine at what age children create their complete CMS. In China there exist some language materials, which seem to provide a hint that children, in the third grade of primary school, can occasionally use some conceptual metaphors while High Graders become more successful in this task. For example, a third-grade pupil once wrote:

(6) 为什么在大人眼里我还是一个永远长不大的小孩,我每走一步都需要他们的叮嘱?

(Why am I still a child in the eyes of the adults? Is it necessary for them to urge me when I go every step?)

Obviously, here is a conceptual metaphor that "**Life Is A Journey**". Then a sixth-grade High Grader employed and gave the rein to the same metaphor in his following sentence:

(7) 在前进的道路上,有的人跌倒了便退缩不前,轻易地放弃。有的人跌倒了就爬起,在不断的跌倒爬起中得到锻炼,越走越稳,离成功也越来越近。

(In the path towards the success, someone falls to the ground and withdraws from advancing, then gives up easily; someone falls to but to stand up again and again, after which he walks stably and approaches nearer to the success.)

Comparing with these two examples, High Graders' systematicity by using the metaphors appears vivid.

CONCLUSION

In the classical theories, metaphor has been studied for many centuries and is treated only as a figure of speech and as deviance from literal language. However, when human beings confront the chaos of the universe, it is

metaphorical mechanisms that help them to learn about the mystery of the universe and perceive its regularity and structure, and thus categorize this world. Therefore, through the analysis of Chinese children's metaphorical thoughts from preschoolers to High Graders, it is significant to provide theoretical support for further study. Much more efforts must be exerted to hunt for more feasible and practical metaphorical strategies and methods in children's learning. What's more, learning, as a kind of conscious cognitive process, needs more future research on the application of metaphorical cognition.

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