Study of Metaphorical Competence in Chinese-speaking Children with High-functioning Autism

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Abstract. Metaphor plays an important role in human’s way of thinking and the using of language. Compared to typically developing (TD) children, the researches on metaphorical competence in Chinese high-functioning autistic children are relatively few. The present research is aimed to study the competences and defects of metaphor comprehension in Chinese children with high-functioning autism (HFA) as well as analyze the possible reasons. In order to achieve the goal, the research conducts an experiment on 26 children with HFA and 26 TD controls with the questions designed on the basis of Metaphoric Triads Task (MTT). The results shows that children with HFA have certain metaphorical competences but compared to the TD children, Chinese autistic children showed worse integrative manifestations than TD children. The results also reveal that metaphors based on shape similarity are the easiest to understand for HFA children.

Introduction

Autism spectrum disorder (ASD) is defined as a single category under the category of neuro-developmental disorder, with two core symptoms for diagnosis which are “persistent impairment in social communication and social interaction” and “restricted, repetitive patterns of behavior” [1]. The definition of “pervasive developmental disorder” has been canceled in DSM-V, together with the “discrete” sub-categories including autistic disorder, Asperger disorder, and childhood dis-integrative disorder. The great changes in the diagnostic criteria since the first clinical description of autism put forward by the psychiatrist Leo Kanner reflect the challenge and difficulty of the diagnostics of autism and urges people to make deeper research on autism.

Language disorder is considered to be a major problem in the development of autistic children. Instead of phonological and grammatical defects, the semantic and pragmatic competence was damaged first, which may violate the principle of semantic restriction. The language development of children with autism has the following characteristics. First, they usually have developmental delay in language. Second, they have echolalia. Echolalia is a typical form of language, which is quite common among children with language difficulties, such as autistic children, mentally-retarded children, late talkers and children with specific language impairment. Echolalia is a typical feature of the autistic children's language, which means autistic children keep repeating the words they heard. Third, they create new words. Research demonstrated that children with autism use more new words and specific words. Fourth, they often change over and avoid pronouns in their words. Normally, children with autism say themselves as ‘you’, and consider their communicator as themselves. Finally, their voice rhythm is disordered. People often feel that autistic children’s tone are monotonous, not melodious, and sometimes they screaming suddenly. Children with autism have significant differences in the perception and expression of the rhythm to the ordinary children [2]. They are also lack of effective communication. They cannot use language properly, such as having no reaction to the talker and giving few feedbacks to others in the conversation.

Pragmatic problem is referred to be the core of language disorder. Children who show disproportionate difficulty with the pragmatic are described as having pragmatic language impairment or social disorder. It is suggested that a majority of people with this disorder perform within the normal range on IQ testing' and use spoken language as the primary means of
These individuals are typically regarded as having high-functioning ASD, or HFA. HFA children tend to have difficulty in the comprehension of figurative speech, especially with reference to metaphors. The conclusive results given by experimental research are still rare. Several recent studies have shed light on the role of factors associated with theory of mind (TOM). Dinishak [4] examined the mind-blindness as a metaphor for autism. Su-Fenhuang, Manabu Oi, & Aiko Taguch [5] discussed the comprehension of figurative language in Taiwanese HFA children with analysis of the role of TOM and receptive vocabulary.

Metaphor is a comparison between essentially unlike things. There are two components in every metaphor: the concept being actually discussed, and the thing to which it is compared. Metaphor is the basis of cognitive activity which means in the insinuation of one thing to perceive and experience another thing. It also acts as a regeneration mechanism of language system. Metaphoric competence, which is also a part in language competence, means knowing how the target language reflects its concepts on the basis of metaphorical structuring. It also reflects the pragmatic ability of individuals. Do autistic children have this ability? How their metaphorical competence is developing? There are many related questions worthy to be discussed and the need for researching on metaphorical competence in children with autism is therefore great.

In recent years, Chinese researchers did a lot of work on the language disorder of children with ASD. X. Y. Li & J. Zhou [6] discussed general characteristics of autistic children’s development based on the study of foreign researchers. The results indicate that: autistic children make use of metaphors poorly, and they are also lack of metaphor comprehension. S.F. Cao & J. M. Fang [7] reviewed researches on the characteristics of semantic processing and cognitive neural mechanisms of autism spectrum disorders. They found the core of all the impairments of autistic children's developmental disorder is verbal and nonverbal communication disorder. Q. Zheng, Z. Jia & D. Liang [8] investigated the role of semantic knowledge in metaphor and metonymy comprehension in Chinese-speaking children with HFA. They found that Chinese children with HFA were capable to retrieve similarities between the two terms of the metaphor and construct conventional match relations, but not as capable as the TD peers; But the research on the metaphorical competence in HFA children is not mature and still limited. It is the attempt and accumulation of theoretical construction for the study of metaphor comprehension of children.

The present study investigated metaphor comprehension in a group of HFA children (age range: 4–6 years) using MTT test that combines quantitative and qualitative approaches to assessment. The purpose of the study is to make a comprehensive approach to the competences and defects of metaphor comprehension in Chinese children with HFA, and to compare their performances on metaphor, as well as analyze the possible reasons from the point of semantic field. It’s also hopeful that the paper might provide some enlightenment on the education and training of autistic children to promote their competence of social communication and interaction. Meanwhile, it can cause teachers and parents’ attention of metaphorical competence.

**Methods**

**Participants**

Participants of children were recruited from kindergartens, schools for the rehabilitation of autistic children, through community resources, and via electronic media.

The HFA group: ages 4-6 years, with a diagnosis of high-functioning autism spectrum disorder (n = 26)

The TD group: ages 4-6 years with no family history of ASD and/or psychiatric, learning, or neurological disorder present in the child (n = 26).

All participants had full-scale IQs of at least 70, and all participants in the HFA group had been previously diagnosed with and ASD according to DSM-IV TR diagnostic criteria [9]. Diagnoses were confirmed by psychiatric examination and clinical observation. They had no marked hearing or other
major sensory or physical disabilities. Participants with typical development were matched to those with HFA on the basis of chronological age and full scale IQ. There were no significant differences between mean full-scale IQ scores of HFA and TD participants.

Materials

The study of metaphor has a long history of thousands of years. Most researchers use visual or auditory as the experimental carrier. Researchers test the subjects’ reaction, metaphorical competence and their expressive ability through their understanding of story or the way they talk to the examiners. But autistic children are usually unable to express their thoughts exactly since most of them have language disorders. In order to test the metaphorical competence of autistic children more accurately, researchers decide to use pictures as testing material.

Many child experimental psychologists found that when the stimulation is picture, children's learning and memory effect are better than the language stimulation. It is possible that picture materials are more effective to help autistic children understand metaphor.

In 1980, Nathan Kogan, Kathleen Connor, Augusta Gross and Donald Fava modify and finish the Metaphoric Triads Task (MTT). MTT is used to test the metaphorical competence of people from seven to twenty-eight years old. This test tools use the pictures to show the noumenon and vehicle of metaphor. The test material consists of twenty-nine groups of pictures and each group has three pictures. Both of two pictures among them have some relations with each other. And only one type constitutes a metaphorical relationship. For example, there is a group of picture consists of three pictures. They are a fish, a snake and a river. The relationships between those pictures are: fish and snake are animal, the fish live in the river, and the river bends like a snake. The last one constitutes a metaphorical relationship. This set of pictures has become the most popular test material to checkout children metaphorical competence.

MTT has twenty-nine groups and eighty-seven color images. Since this research’s subjects are preschool HFA children and they have limited attention time, the quantity of pictures are reset according to the actual situation.

First, the researcher asked three college students to choose MTT pictures. They should pick up twenty groups of pictures from twenty nine groups. The pictures they choose should see clearly and the metaphoric relationship is suitable for the thinking development level of children. Then the researcher uses these pictures to test. After testing three times, the researcher found it excessive for children to test 18 groups of pictures. Many children started distracting after testing fifteen groups. Some of the pictures are too difficult for children to understand. Others may lead to misunderstanding because of low definition. Finally, the researcher chooses 12 groups of pictures which consists 36 pictures to be the testing pictures. There are three types of metaphors in the group picture: static perceptual type which consists of shape subtype and color subtype; dynamic perceptual type consisting of motion subtype and sound subtype and conceptual feature type.

This subjects’ metaphorical competence was examined in the test which was designed by the author. Considering the subjects are autistic children, the author used target picture matching as a model. In the target picture matching, researcher chooses one from the two pictures with a metaphorical relationship as target picture and let subjects select one picture from the rest of two pictures to match with target picture. In these two pictures, one is the metaphor picture, the other one is the interference figure. To a certain extent, it reduces the difficulty of testing.

How to determine which picture is target picture? Based on metaphor theory in linguistics the target is using vehicle to express noumenon. The researcher regards noumenon as target picture and the subjects need to find vehicle to match with noumenon. The researchers take the picture of fish, snake, and river as example. Among those three pictures, the river and snake have metaphor relationship. The picture of river is chosen to be a target picture and the picture of snake is regarded as the metaphoric picture as a result that river is compared to a snake and it bends like a snake. The picture of fish is interference figure. If the children can choose snake, then it indicates that the subjects have recognized the relationship between these two pictures.
Scoring Criteria

The scoring criteria is composed of two parts. One is the score from the match, and the other part is the score from the explanation of match reason. There are scores of three points in metaphoric matching. The children who can choose metaphoric picture at the first time gain two scores. The children who can give their right answer when researcher provides the picture with metaphoric relationship gain one score. Otherwise, the subjects gain zero score. Those who provide an adequate explanation for metaphor gain two scores. Children gain one score when they cannot give their explanation to the similarity between metaphoric picture and target picture. The children who cannot provide any reason gain zero score.

Procedures

The research is conducted in an independent and quiet room with one-to-one approach and finishes in twenty minutes. Before the test, the researcher needs to talk with subjects to know their name and age. Making subjects relax themselves and let them be familiar with the test environment. In order to let subjects know the testing requirements, the researcher decides to pilot first.

After the piloting, researchers interviewed the subjects and questioned about their feelings of test. After analyzed their feedback, some adjustments were made to the test materials, as well as ensure the test's reliability, proficiency and validity. This metaphorical competence test was piloted several times before getting to the real test in order to remove ambiguities and to ensure that the participants could follow the instructions.

The researcher presented the pictures in front of the subjects.

First, the researcher presented three pictures in front of the subjects. The researcher gave instruction language to subjects: Let’s look at these three pictures: They are snow, winter coat and rain. Second, the researcher picked target picture from three pictures. Then let subjects choose a picture which is similar to target picture. The researcher should ask subjects: Which one is the most like this one? If subjects can select one picture, the researcher should continue to ask: why? Third, if subjects didn’t select the metaphorical picture at the first time, then the researcher put the metaphorical picture and target picture together. Then let the subjects think about can these two pictures match with each other and ask why. Finally, the researcher ended up the test and expressed the thanks to all the subjects.

Results and Discussions

In the metaphorical competence test, the correct rate of HFA children is 69.8%, and the correct rate of ordinary children is 80.5%. It indicates that children with autism have metaphorical competence but was weaker than that of ordinary children on the whole. In dynamic perception, the children with autism were also weaker than that of ordinary children. But the children with autism perform well in shape type. Why can the autistic children have metaphorical competence? In autistic children’s cognitive pattern, the study proved that children with autism have their advantages in visual sense. They are more likely to receive language information than language stimulation. According to the clinical application and research outcome, children with autism have always been described as visual thinker. Many researchers discovered that in the language understanding test, the image can help children with autism understand the meaning of language compared with words and phrases.

What’s more, it was found that the lexical semantic knowledge of TD children is strikingly related with their perception in conventional metaphors while children with HFA correlated the lexical semantic knowledge with their comprehension of novel metaphors. This result indicated that both HFA children and TD children are capable of predicting their understanding of metaphor. But with comparison of TD children, children with HFA might perceive metaphor in a different way. One possible explanation to this is that children with HFA might process stimuli of metaphors in a particularly atypical way [10].
Implications

Although there are some drawbacks comparing with TD children, the autistic children have their own characteristics such as keen sense of music, good calculation skills and excellent memory which exist in many HFA children. Besides, children with autism are good at identifying shape appearance. Therefore the educators should guide the autistic children based on their specific characteristics. Teachers and parents of the autistic children need to discover the creative potential and advantages of children with autism and work out various teaching goals with the correspondence to their features. What the children with autism need most is understanding, love and care from society.

It is recommended that language trainers in autism school help children get to know metaphors and other figures of speech, raise children’s awareness of comprehending metaphors and encourage children to express ideas via metaphors and other figurative ways. Metaphor enables HFA children to promote the understanding of things and explore their potential skills of using language. What’s more, it provides an effective guarantee for their development of social communication and interaction. As a result, it is advisable to let the metaphor become an important part in education. Moreover, graph is good for autistic children to improve metaphorical competence which can also help educators to create a relaxed environment for children of autism.

References