CHAPTER 2 LITERATURE REVIEW

2.1 Pretend play

Role playing such as being the doctor, police officer, super man, or spider man is most common for children aged 3-6 years old. Brain's scientists support that humans have mirror neurons in brain. Mirror neurons are the answer for how both people and animals adapt themselves to survival. This ability helps people survive in society because they can interact with other social situations by imitation and adaptability (Giacomo Rizzolatti, 2004). A result from an experiment of macaques, a type of monkey, shows that animals have mirror neurons as well. In sum, both humans and animals have mirror system responded that is called "the sound of actions" (Christian Keysers and colleagues, 2011).

Imitation can be seen from the theory of mind - an understanding of other people as oneself, develop behavior. This skill is a fundamental ability for humans to understand human behaviors (Andrew S. Gordon and Jerry R. Hobbs, 2011). A human is able to understand other situations like they happen to themselves. This ability develops in the aged of 4 years in children, and the children aged 6-7 years old understand the third person. The theory of mind in children, especially during the ages between 3-6 years old, develops faster than other skills. This theory connects to pretend play (SvenOlof Dahlgren, Annika Dahlgren Sandberg, Maria Larsson, 2009). Theory of mind is able to explain children's understanding that they compare themselves with others (Shatz, 1994) Moreover, for children who are keen on pretend play, theory of mind is able to apply for this type of children (Lillard, 1994). However, if the children are not good in terms of theory of mind, they will have a problem in expressing themselves. For

example, autisms do not have mirror neuron. Therefore, they do not understand other feeling and are not able to imitate (Gordon, 1998).

2.2 Mindful of symbols

Being Mindful of symbols, human ability is to create and manipulate a wide variety of symbolic representation (Deloache J., 2000). Adults usually understand the meaning of symbol but very young children do not. Children of 9 months do not understand items on a picture. A study of two children from different cultures, one from US and another from Ivory Coast, found the same result that each baby responded to a picture in the same way. The researcher provided a bottle picture to children (see Figure 2.1(a)(b)). Both tried to grasp and rubbed the picture (DeLoache, Pierroutsakos, Uttal, Rosengren, &Gouttlieb, 1998). Besides, children aged 1.3 to 2.6 years old have a problem of scale error. They tried to put a big object in a small container (DeLoache, Pierroutsakos, Uttal, Rosengren, &Gouttlieb, 2006). There are many experiments such as children 2 years old playing toy replicas in a clearer way (Bornstein, 2006), 1.6 years old not selecting the correct real thing to show a replica (Tomasello, Striano, Rochat, 1999), and children looking at objects in the video and matcheding them with replica objects (Johnson, Younger, Furrer, 2005; Younger & Johnson, 2004; Younger & Johnson, & Cueller, 2005). Form all experiments, it can be concluded that young children can recognize objects by tactile learning. This research tries to find if children of 3-6 years old are able to recognize symbol representation.

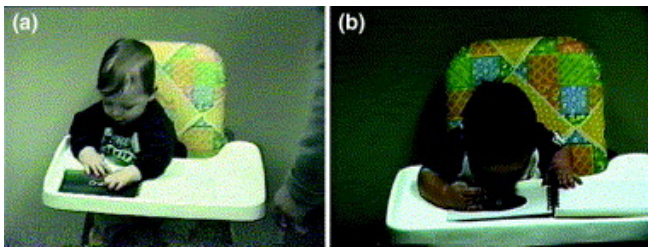

Figure 2.1 (a) A boy tried to grasp a bottle in picture.

(b) A boy prepared to put his lips on the nipple of the bottle.

(Source: DeLoache, 2009)

2.3 Dual Representation

The theory that plays an important part in many symbol theories is "Dual Representation". This theory is a part of Mindful of Symbols theory, Generally symbols have two functions: one must perceive and mentally represent both the object itself and one symbols represent something else. Symbol-referent relations that appear simple and clear for adults but they are not easy for children's understanding. For example, very young children aged 1.6 and 2 years old showed how to understand words and pictures symbolically from the experiment. For the word 'Whisk', children compared between the whisk drawing picture and the real thing. Then the researcher asked for a whisk. Some children chose the real thing alone while some both but no children chose only a whisk drawing picture. They never selected a drawing picture alone. The children learned the label of the object from word but they could not refer to the drawing picture. (Preissler and Carey, 2004).

Another function represents the relation between the object and what it stands for. The incredible shrinking room experiment shows very young children's performance on symbolic and non-symbolic objects. The dual representation hypothesis shows that

children are able to represent both symbols and real things. Moreover, they understand abstract relationship between two things. The more striking the symbol is, the more difficult the children to use it as an abstract symbol (DeLoache, J.D., Miller, K.F., & Rosengren, K. S., 1997). The incredible shrinking machine is an experiment that indicates children's scale understanding. A researcher told children aged 2.5 years old that this machine would reduce the size of a toy. Then he showed a big toy in front of the machine and later children were moved to another room, and then they would hear a fake sound from the machine. The researcher replaced a big toy with a small toy (see Figure 2.2). When the children walked back to the room, they believed that the toy was reduceding size by machine. They believed the toy was shrunk (DeLoache, 1998). The result shows that a symbolic representation relates two spaces. Children of 2.5 years old lack the ability to distinguish an abstract relationship between two spaces.

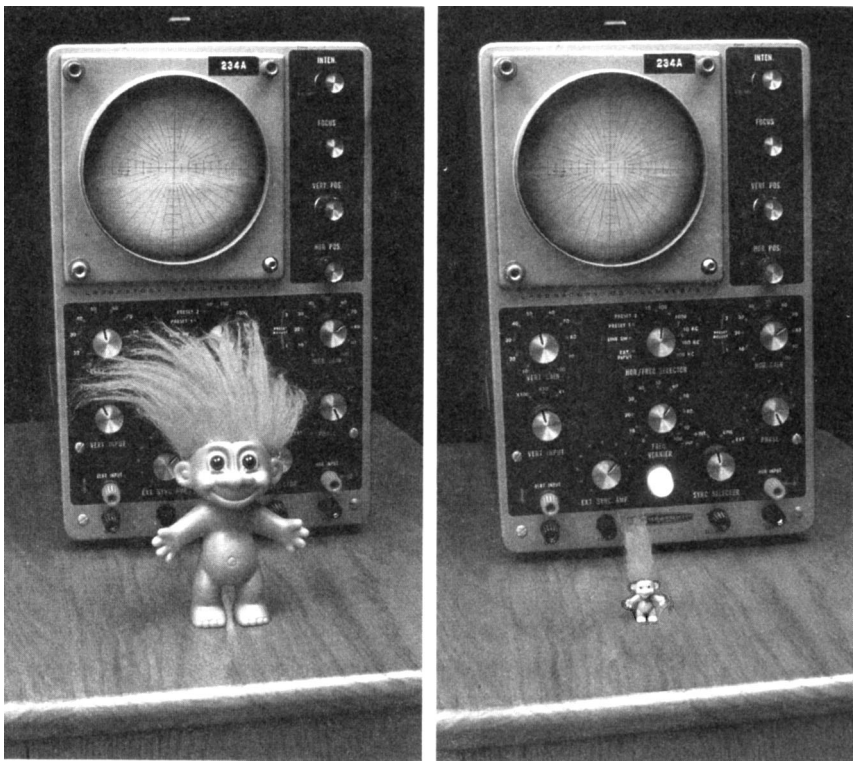

Figure 2.2 The incredible shrinking machine at work

(Source: DeLoache, 1997)

Another research provides photography to children 3, 5 and 7 years old. The researcher would like to know if children focused on the referent symbol while ignoring the characteristic of the symbol itself. The researcher showed pairs of photography taken from the same scene but from different view and angels. He then asked the children why that the pictures looked different. However, most of younger children answered that the pictures were different.

Learning symbol research indicates that symbols like pictures or models represent something. Therefore, dual representation is important and challenges children in this age. There was an experiment testing the children by giving them real shoes pictures. The children aged 3 to 4 years old tried to wear those paper shoes and could explain how they felt with them.

In another case, researchers would like to know how children used symbols to solve a problem. The examiners hid a small doll in a small model house, which was imitation from a real house. Then, they have the children find things in the real house. As a result, children of 2.5 years old failed the test. Children of 3 years old were able to find the doll in the right place. The result shows that the children of 2.5 years old were not able to understand between the model and the room scale and symbol representation. However, children of 3.5 years old did not have complete understanding, even though they were able to find the hidden doll. An illogical interpretation is supported in one study. Children aged 3 years old were allowed to play with a model before it was used as a symbol. Touching the model would reduce children's dual representation. Children played with the model and kept their attention to it more than thought the model represented something. This reduced the relation between the model and room. On the

other hand, the model was placed behind the windows for 2.5 years old children. It was obvious for the children who never touched the model. It was successful that children understood the model was a symbol (DeLoache, 2000). In other words, children aged 2.5 years old learned from the event that they noticed or concerned.

If the model has a lot of the salience, children will decrease their attention to a model as a symbol. In contrast, if the model was decreased in terms of the salience, children will increase their attention to a model as a symbol. Therefore, reducing details is an interesting and challenging factor to study children's imagination. There is a question about the reality of objects. Moreover, children of different ages would give different results.

Another experiment showed that children learned to improve their ability. Children aged 3 and 4 years old drew four pictures: a balloon, a lollipop, themselves, and the researcher. The result showed that a lollipop and balloon were indistinguishable (see Figure 2.3). When the researcher asked the name of each drawing, children still called the balloon "balloon", although the picture was similar to the lollipop. However, children aged 3 and 4 years old tried to produce better drawing when their knew drawings would communicate to an adult (Bloom and Markson, 1998). They had an ability to improve their results. The question showed that skills were to improve imagination.

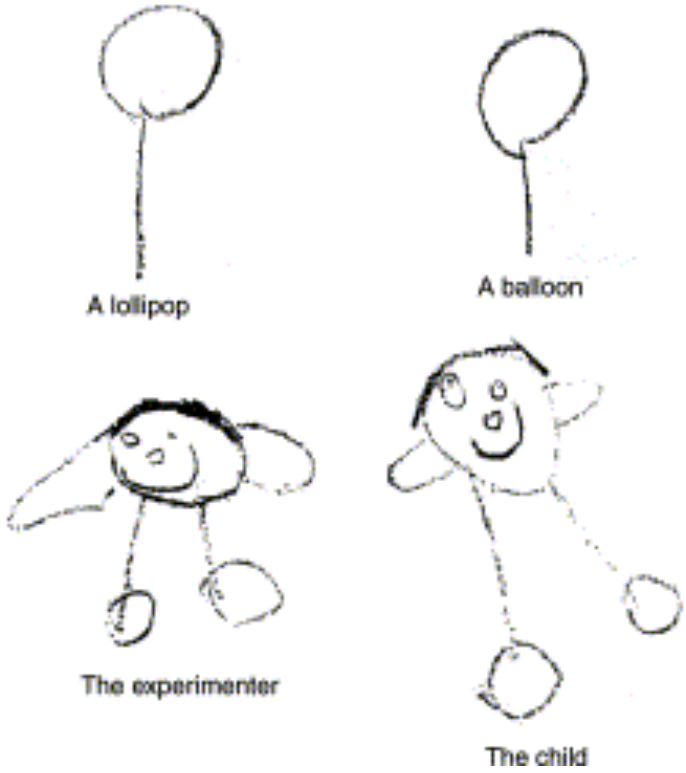

Figure 2.3 Bloom and Markson experiment result

(Source: Blooem and Markson, 1998)

Another interesting experiment showed that younger children were interested in function and detail more than symbol graphic. For instance, children were interested in pop-up book function more than the pop-up book's pictures because they focused too much on each object itself more than the relationship referent (DeLoache, 1997). Thus, it is important to observe children aged 3-6 years behavior in terms of how they understand symbols