Abandoning here-and-now language: sensorimotor development in the acquisition of Persian as a first language

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Abstract

Going through the sensorimotor period of language development, children use words referring to objects not immediately present. This study aimed at finding out the extent of one- to two-year old Iranian children's abandoning here-and-now language. 15 children were selected from Talash Kindergarten in Shiraz as the participants. Their language and behavioural development was carefully observed and recorded for five months. The qualitative data analysis of the study indicated that infants having a greater mastery on object permanence are able to use words for objects not present in their immediate environment. Thus, the study supported Piaget's cognitive development in language acquisition.

Keywords: cognitive development, sensorimotor period, first language acquisition, object permanence

1. Introduction

An important theoretical construct which has long been under investigation is that human infants indicate several cognitive competences in the second half of their first year of life (Kagan, 1984; Bell & Fox, 1994). One of the major cognitive developments is the appearance of object permanence. It refers to child's understanding the fact that when objects cannot be directly perceived, they still continue to exist. It is the ability to create a mental schema of an object. Biologically speaking, evidence in the literature has shown that it is the display of frontal lobe maturation, especially when there is an increase in hemoglobin concentration in frontal cortex (Baird, Kagan, Gaudette, Walz, Hershlag, & Boas, 2002).

When an infant is born, he cannot reach or grasp objects. Through the completion of two processes, infants will be able to do the reaching. First, there should be a link between visual signals and motor acts. Secondly, the nervous system must be capable of controlling the arms (Milani-Comparetti & Gidoni, 1967; Bekoff, Kauer, Fulstone, & Summers, 1989; Hadders-Algra, Van Eykern, Klip-Van den Nieuwendijk, & Prechtl, 1992). In the initial stages, the infant is able to distinguish and grasp objects from a distance of about fifty centimeters (Atkinson & Braddick, 1981). Right after the onset of reaching, human infants can reach for objects in their surrounds and almost always attain their target. At this time, their motor systems are able to manipulate their motor output (Konczak, Borutta, & Dichgans, 1997; Konczak, 2005). Piaget (1954) had earlier commented that normal children in their first year of life will achieve sensorimotor conceptualization of objects, and at the same time with a sensorimotor development, they...
start the acquisition of language (Piaget, 1954, cited in Chen & Weng, 2005). An evidence of this would be the case of abnormal children, including autistic ones who have impaired sensorimotor object knowledge. The results of Sigman and Ungerer's (1981) study on autistic children's object permanence indicated that young autistic children were capable of representational thought as measured by sensorimotor skills, particularly object permanence. The idea is that the deviant pattern of language acquisition in autistic children may be a reflection of their disordered sensorimotor concepts (Sigman & Ungerer, 1981). Guerin and McKenzie (2008) referred to Piaget's idea of stages of development. According to Piaget, these stages are not manifested just because of any preprogrammed maturational process, but due to the operation of a learning mechanism which interacts with the environment. To Piaget, the learning mechanism is innate in the infant, and it is invariant, while the knowledge structures it builds are both variable and complicated.

The sensorimotor period represents the infants' capacity to separate his actions from his perceptions (Uzgiris & Hunt, 1975). Using Casati and Lezine's (1968) stages of child's sensorimotor intelligence scale, one can assess sensorimotor behaviors. Casati and Lezine's scale consists of some subtests. In the first subset, exploration of objects, the child's ability to separate and then integrate components of an object is examined. The second one, search for the hidden object, is a subtest that examines the child's awareness of an object when it is covered. Use of intermediaries is a subset in which the ability to see a relationship between two objects is examined. Scoring criteria is explicitly stated for these items. Using Casati and Lezine's scale, Kopp, Sigman, and Parmelee (1974) did a longitudinal study on infants and found an overall progression in infant's development from nine to eighteen months of age.

Simultaneous with behavioral development is the acquisition of language. The time between the cognitive and the corresponding linguistic achievement varies from one person to another. Johnstone and Slobin (1979) used the term waiting room for the difference in time interval for infants' linguistic and cognitive achievement. Infants begin to use words which refer to objects not immediately present when they gain mastery over object permanence. There are some pieces of evidence in the literature in this regard. Tomasello and Farrar (1984), Baillargeon, Spekle, & Stanley (1985) and Gopnik and Meltzoff (1987), for example, suggested that object permanence develops simultaneously with words which are not limited to here-and-now language. Their studies supported high correlation between cognition and language and that language and cognitive achievements occur with very short time lag (Carroll, 2008).

Following Gopnik (2001) on the notion that children do not stay in the waiting room very long, using Johnstone and Slobin (1979), the present study aimed at finding out whether Iranian infants who are acquiring Persian as their first language achieve cognitive development along with linguistic development or not. For this purpose, the following research question was raised:

Q- To what extent do the Iranian infants achieve cognitive and linguistic development along with each other?

On the basis of this question, a null hypothesis was posed.

2. Methodology

2.1. Participants

Using availability sampling, the participants of the present study were 15 male and female Iranian children at the age range of around two who were selected from Talash Kindergarten in Shiraz, Iran. They were normal infants who were acquiring Persian as their first language and developing different behavioral and cognitive developments.
2.2. Instrumentation

In order to collect qualitative data for the present study, a careful observation was done on the natural lingual and behavioural performances of the infants for a period of five months. The children's performance development in behaviour as well as their first language were video-taped and recorded and later described and transcribed.

2.3. Procedures

The 15 male and female infants who were at the age range of 12 to 24 months old were chosen. Then, children's language development was carefully observed and recorded for a period of five months. A partial transcription was made based on the participants' language performances. In order to observe the infants' cognitive development, all 15 infants were administered several object permanence tests. The tests were based on what Casati and Lezine (1968) suggested in their scale. Each infant was administered three object permanence trials.

In the first test, a toy was shown to the infants. Then, it was hidden behind a curtain in front of the child. They were given a limited time lapse (not more than five seconds) to search for the toy. In the second trial, each infant was shown a toy in a certain place and was then required to close his eyes. The researcher changed the place of the object and asked the infant to find the displaced object. In the third trial, several objects were put on a table in front of the infant, and he was required to look at the items carefully. Again his eyes were closed, and after about five seconds, the infant was required to open his eyes and say the name of the missing item. The infant was considered to have achieved object permanence if he was successful in finding the hidden object on all three trials. The reason of objects displacement was to see if the infant was able to maintain the related schema in his mind.

While infants' cognitive development was being recorded, the infants' use of Persian words was also videotaped and later transcribed. Then, a comparison was made between the infants' performances in the object permanence trials and the acquisition of Persian words.

3. Results and Discussion

On the basis of the infants' language performances and their success in the "object permanence trial", it was found out that infants who were at the age of around twelve months were more successful in finding hidden objects. It was also found out that they could remember those objects which were in their usual places and not displaced. As for their linguistic development, they could use Persian words which referred to concepts independent of time and place.

For the infants who were at the age of one to one-and-a-half years old, it was discovered that children were able to track the objects which were displaced. Those infants who were around the second year of their lives were considered as the fully developed individuals as far as their mastery over object permanence were concerned. They had a complete representation of objects in their minds. On the basis of their language performances, it was found out that the infants' sensorimotor skills were not delayed relative to their first language developmental level.

Generally, the comparison of the infants' success in the three object permanence trials and the use of words revealed the fact that Iranian infants at the age range of one to two years old were able to use words which were not limited to here-and-now language in case they had a full mastery over object permanence.
4. Conclusion

The present study was an attempt to find out to what extent Iranian children at the age range of one to two years old were able to abandon using here-and-now language. The qualitative data analysis of the study indicated that infants who were developing more mastery on object permanence were able to use words for events and objects which were not present in their immediate environment. It can be concluded that the development of sensorimotor skills and object permanence reflects the child's increasing first language proficiency. Thus, the results of the study supported the fact that the relationship between first language acquisition and cognitive development, in general, and object permanence, in particular, is a close one. The results of this study were, therefore, in line with what Piaget stated on an infant's cognitive development along with his language acquisition.

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