



Review

An analysis of the impact of language on cognitive development and its implications on the Nigerian school children

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ABSTRACT

This paper critically analyzes the impact of language on cognitive development and its implications on Nigerian school children. It examines the key concepts related to language and cognition in lieu of authoritative citations and discusses the impact of bilingualism on cognitive development. It equally looks at ways that language affects cognitive development. The trend of the findings illustrates the fact that language has a formidable impact on cognitive development including metacognitive skills and even in our worldviews and cosmologies. The paper further articulates the implications of the findings on the Nigerian school child, educational system and gives relevant recommendations in lieu of its findings.

Keywords: Language, cognition, development, children.

INTRODUCTION

According to Urdang (1998), language is a body of words and systems common to people of the same community nation of the same geographical area or the same cultural tradition. It is also the communication by voice, using arbitrary, auditory symbols in conventional ways with conventional meanings. It is any set or system of such symbols as used in a more or less uniform fashion by a number of people, who are thus enabled to communicate intelligibly with one another.

Bullon (2005) defined language as a system of communication by written or spoken words, which is used by the people of a particular country or area.

Colman (2003) has it that language is a conventional system of communicative sounds and sometimes (though not necessarily) written symbols capable of fulfilling the following hierarchy of functions suggested by the German-born Austrian psychologist Karl Bichler (1897 – 1963) and Austrian-born British philosopher Karl. R.

Popper (1902-1994); expressing a communicator's physical, emotional, or cognitive state, issuing signals that can elicit responses from other individuals, describing a concept, idea or external state affairs, and connecting on a pervious communication.

Cognition is the mental activation involved in acquiring and processing information (Colman, 2003). The ability to use language is a very important part of human cognition. It is this ability which distinguishes us from other animals (Gardner 1983). Development according to Bullon (2005) is the process of gradually becoming bigger, better, stronger or more advanced. It is qualitative increase in the functioning of an individual as a result of maturation and experience. A child generally is a human between the stages of birth and puberty, or in the developmental stage childhood is between infancy and adulthood. There is ample evidence to show that from conception to six years of age, children undergo quick cognitive, social and

physical development. By the age of six years their brains have developed to almost their adult size. (Ikediashi 2008; Adeniyi 2003)

The cognitive development of children starts from birth to old age. Colman (2003). Ekeruo, Ikediashi, Ekwe and Nwamuo (1989), also concur that a child's cognitive or intellectual development starts from the moment of birth and improves in stages. Language acquisition does not start from the moment of birth. According to Clark (2004) when children acquire their first language, they build on what they know, i.e the conceptual information that discriminates and helps create categories for the objects, relations and events they experience and also provides the starting point for language acquisition from the age of 12 months. After which, the child's first set of conceptual representations is then added linguistic representations for talking about experience. The question is do the children discard earlier conceptual representations in favour of linguistic ones, or do they retain them? He added, that recent researches reveal that they retain both types of representations for use as needed. From the period of 12-18 months of age, children begin to learn the language of their community (Harley 2002; Burling, 2005).

Language Development and Children

No two languages in the universe are exactly alike, in terms of linguistic parameters such as the grammatical arrangements, the idioms, syntax, synonyms and antonyms and the letters of the alphabet and number. For instance, English language has 26 letters alongside French and Chinese, Latin has 23, Greek has 24, German has 25, Spanish has 27, Igbo has 36, Yoruba has 25 while Hausa has 29 letters. Some have diagraphs (two or more English letters) for a single letter as in Igbo, Yoruba and Hausa, Chinese has more than two for *(Yi ke si) and up to four as in W (dou bei erwie). Some do not have English letters like J (which is lacking in Latin). Greek language has letters without English equivalents such as O, (teta), Ψ (psi) etc. Clark (2004) supports the above view when he said, that languages offer more terms than others for particular domains. Some indicate whether information comes directly from the observer or through hearsay. Some assign cases to nouns to mark grammatical roles (e.g agent, location, and instrument). Speakers of different languages learn different sets of grammatical elements that must be used in every utterance (Burling, 2005).

Language draws from and influences our thought processes. However, there is a controversy centered around the extent of this interaction. Nature proponents see language as a very autonomous ability, while nurture proponents tend to see it as more inseparable from other, general cognitive abilities. It seems, upon cursory

examination of arguments that the two schools of thought agree on almost all basic tenets of language use, and disagree only on the exact recipe for combining these tenets.

Chomsky (1996), Gardner (1993) and others of similar ideologies believe that infants are born with significant prewired knowledge of how language work and how they do not work. Views within this group vary slightly, but they all hold to this basic tenet and cite ample evidence in defense of this view. These proponents of the innateness of linguistic ability also believe that the genetic basis for language came about as the result of Darwinian evolution and by an extension of the "survival of the fittest" argument. Again, individual views vary slightly, but all supporters of this school of thought see language as a product of Darwinian evolution (Gardner 1993).

On the other hand, Piaget, Clark, (1997) sees the newborn as possessing only a few basic cognition abilities. The more specific abilities we see in the developing child, they argue, are due to interactions with the environment and are independent of any inheritable code found in the genes. They place language skills in this category, and so they disagree completely with Chomsky's assertion that human inherit certain linguistic knowledge. In addition, proponents of the Nurture ideology view public language as a toll constructed by people for use by people, and they believe its development is due to cultural evolution, a completely different mechanism for change (Clark 2004, Ikediashi 2008).

However, both language and cognition are found within the Piagetian first stage of 0-2years. Clark (2004) has it that some researchers focus on the first year of cognitive development and assume that some children build on this to begin with, and then narrow their focus to just what happens in a specific language. In other words, children first build on what they know before acquiring language, and then use language as well in the constructing of additional categories. The point here is that cognition and language interact in a cyclical fashion as children learn more. A baby sucking the breast of his mother looks on the face and remarks it as it does to his care-giver on cue, and easily recognizes the face. He marks the faces of his older siblings and very close relations but runs away or avoids being carried by strangers. If children use language in reconstructing cognitive and conceptual realities as Clark's findings portray, it implies that language controls world views.

Nnachi (2007) has it that without language, human activities would have been grossly limited. One of the major characteristic of humans all over the world is the ability to generate speech or produce words that have meanings assigned to them. There is no human group without a language or oral means of ensuring that communication is affected among the members of the

group. Reporting the view of Gleitman, (1996), Nnachi (2007) further stated that in all communities and at all times, humans tend to be alike in having languages as major means of communications.

In addition, Nnachi pointed out that due to the fundamental position of language in human activities living; every human naturally wants to speak. A dumb person would be seen struggling to speak even though he/she is obstructed. If language is produced, the human person is understood by his group and may be assisted in business transactions, day-to-day life activities, knowledge or skill transmission as well as general life performance. Most importantly he is understood since the fundamental principle of life and harmony, is understanding.

Language is a vital technique for communicating feelings, sentiments or thoughts. It is a vast repertoire of terms that is organized by grammar and syntax. According to Nnachi (2007), language makes an organism human, for only human beings can effectively produce language as it represents the highest form of behavioural development. Under normal conditions crying is the first sound made by newly born humans. As babies develop after some months of birth, they start to babble. Crying is not a form of language although it communicates, but babbling is a primitive oral expression signaling speech. Real human speech develops out of babbling (Ikediashi 2008). There are two stages of language namely: the receptive and the productive. Receptive is the understanding of the words passed to the young by parents and older ones as the babies listen, while the speaking of those words in imitation of the older or more experienced persons is the productive form of language. Language goes from receptive to productive stages. Human linguistic development grows with maturity (Nnachi 2003).

Clarks (2004) has it that children get their information about language from their relations. Meaning are not easily mastered with the objects at the first instance, but achieved with the passage of time or mental development. For example, a baby learns the word mummy for mother; he may at the same time in generalization call everybody mummy including his immediate senior who comes near him. Discrimination comes with maturity. Special reasoning development sets in when the child begins to understand directions or spatial positions in a room or prepositions: on, under, inside, outside of something like table, bed or box. Reinforcement paradigms, maternal cues, socialization, environmental enrichment and exposure and intelligence equally play fundamental roles in languages acquisition.

According to Andrea (2012), a child may be able to understand that to find her toy; she needs to go to the left or right of the couch, to the table or some other object. Such actions demonstrate that a child's ability to

accomplish a cognitive task depends on how she may use language.

The impact of bilingualism on cognitive development

The first language a child learns is called the mother tongue or the vernacular. Any other language introduced to the child becomes a second language or the third, etc. as the case may be. As pointed out earlier, every language is unique as it can be differentiated from others. Some transformation takes a whole lot of time. The view of Clark, (1999) makes this point clear where he stated that the Latin alphabet of 23 letters was derived in 600 BC from the Etruscan alphabet. Babies learn languages from their parents, siblings and caretakers as well as adults around them. They are remarkably sensitive to statistical regularities they hear in language, in sound patterns, grammatical inflations on words, patterns for coining new words, and constructions in adult speech. They tend to pick up on the most frequent nouns, verbs, and adjectives first, and then extend their range. In designing, they depend on social interaction. However these processes could become more complex for a child learning a second language like a Nigerian school child.

How language development affects cognitive development

Andrea (2012) has it that developing language skills allows children to learn syntax of a native language and increases their vocabulary. Language learning and condition are therefore strongly related to one another, and when language acquisition is delayed, it may affect the ability to learn concepts and develop spatial skills and other areas of cognitive development. Paraphrasing the view of Clark (2004), Andrea, (2012) opined that children attain language from interactions with other children and adults, and that language development requires the learning of categories, identification, sorting and memory. When children build on these linguistic skills, they can interact with others more easily. Language like culture may even influence conservation in Piagetan tasks (Ikediashi 1998; 2010).

Knowing more than one language however exposes the person to having wider knowledge as every language has something special to offer. According to Martin, Carlson and Buskist (2007) every year, thousands of middle and upper-class American children study a foreign language for enrichment. These children, their parents, and their teachers are guided by the opinion that empirical evidence suggests that bilingualism in children is associated with increased meta-cognitive skills and superior divergent thinking abilities which is a type of

cognitive flexibility, as well as with better performance on some perceptual tasks such as recognizing a perceptual object “embedded” in a visual background and classification task. In other words, language skills can influence cognitive strategies such as being field independent (analytic) or field dependent (wholistic over view).

According to researchers (Clark 2004, and Andrea 2012) the early difference in linguistic performance of bilingual (and multilingual) children can be attributed to a somewhat different language development pattern. Bilingual children learn earlier than their monolingual counterparts that objects and their names are not the same and that one object can have more than one name, for example, “aqua”(Latin) is water (English). *Phobia* is English for strong fear or dislike for something. Hence, knowledge of Latin for instance makes the meaning of English word-*aqua phobia* – easy to know; it is fear for water. Most botanic names are derived from Latin language. Vitality is from the Latin word *vita*, i.e life. *Via* is way or through. Et is both Latin and French meaning ‘and’ *et cetera* is anglicized to mean ‘and other’ abbreviated often as e.t.c. Nigerian has three languages that can very easily mix-up or fit into all the three major parts of the country. Hence, understanding that language is a symbolic reference system is advantageous for meta cognitive development.

According to Hashinieto, McGregor, and Graham, (2007) as quoted by Andrea (2012), by eight years of age, most children readily acknowledge both thematic and taxonomic relationships. The similarities, in over-all performances suggest that the emergence of taxonomic relations is largely determined by general cognitive abilities. The authors opined that the bilingual children’s need to store and retrieve more words across two linguistic systems may have rendered taxonomic relations more salient. They reported that a study by kaushanskaya and Faroqisah (2009) examined the effects of bilingualism on adults to resolve cross-linguistic inconsistency during novel word-learning and came up with the findings that indicate that knowledge of two languages may shield bilinguals from native-language interference during novel word-learning. They wrote that their findings indicate that bilingualism facilitates word learning performance in adults, although the precise mechanism of this advantage remains unknown. The influence on children I think should be subject to vigorous experimental research paradigms, because there is conventional clamour for early childhood education in the mother tongue.

From the foregoing, on cognitive development, it can be asserted that linguistic and cognitive processes interact across the life-span, with linguistic function tied to development of cognitive control throughout childhood and to its decline during old age.

Implication for Nigerian school children

- i. The fact that bilingual children like Nigerian children are richer in Semantic differentiation from monolinguals due to their diversity of terminological-semantic information means that they could benefit more if exposed to wider diversity of range of subject matter better than what is presently done with a limited range of subjects in their syllabus.
- ii. There has been the general tendency to regard bilingualism as an inadvertent contributory factor to proactive and retroactive inhibition of speech. However the study by Kaushanskaya et al (2009) have shown that bilingualism could dampen interference effects at new word learning and even facilitates word-learning in adults.
- iii. Language plays a fundamental role in the development of cosmology (which includes scientific thinking that precipitate technological breakthrough)
- iv. Nigerians (unlike Westerners) are not cognizant of fundamental role of languages not only for economic transactions of the 21st century but also exposure to broader vistas of cosmologies and world views necessary in problem solving paradigms.
- v. Minority languages can easily go extinct and they need preservation including electronic and textual documentations.
- vi. Major languages too e.g Igbo are influenced negatively by modernization trends if the speakers easily embrace western culture.
- vii. Prominent elites, journalist, politicians and educationists have not contributed significantly to the development of their languages e.g Igbo language.
- viii. Urban parents hardly teach the mother tongue to for their children who are only educated by cultural ragamuffins of home-videos and Hollywood.

SUGGESTIONS/RECOMMENDATIONS

Conclusively, language significantly influences cognitive skills. In lieu of the findings and implications above, the following suggestions are made to leverage significantly the role of language in socio-economic and educational transformations:

- i. Our children should be exposed to a wider range of subject matter at school to take advantage of their bilingual capabilities in terminological semantic analysis.
- ii. The three major languages in Nigeria should be compulsory for every pupil to help them feel at home in every part of Nigeria and build a great nation not measured by state of origin but state of impact.
- iii. Our mother tongue needs real enrichment as it shapes our cognition and world view. I suggest we develop science dictionaries of the 3 major languages at all levels and Africanize words if necessary as English does.

- iv. School language cognitions (including mother) are imperative, promotion of languages by song festivals, radio, television programmes are equally fundamental.
- v. Scholarship programmes should be established at all levels for promising students of languages including the mother tongue.
- vi. Parents should teach mother tongue to their children as it shapes their cognition and worldview, and also intimate with our rich cultural backgrounds. e.g herbs and their uses as future doctors etc must first be grounded in local medical cosmology.
- vii. Credit in Nigerian language (mother tongue) should be as important as or even more necessary than credit in English for University admissions into science and technology courses.

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