

**SOME PSYCHOLOGICAL AND EDUCATIONAL IMPLICATIONS
OF RECEIVING SCHOOL INSTRUCTION THROUGH
A FOREIGN LANGUAGE**

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Summary

Findings from Psychological research show that learning through the medium of a foreign (weaker) language may be mediated by the stronger mother tongue; yet in many developing countries, a foreign language is used as the medium of instruction in the early school years when children are inept in the foreign language. A psychological implication of this educational practice is that such children come to possess a common representational (conceptual) system for the two languages instead of possessing separated representational systems; they also come to possess dependent instead of independent linguistic systems. An educational implication of this is that school children may find it difficult to acquire basic concepts through the medium of the foreign language because of the inefficient learning strategy of referring all foreign language concepts to the mother tongue. It is suggested that school children receive instruction through the mother tongue for the first six years at school.

INTRODUCTION

The important role a mother tongue plays in education has been well documented by many language scholars and educationists (see for example the 1976 collection edited by Ayo Bamgbose). The aim of this paper is NOT to restate facts made available to us by language scholars and educationists, but rather to extend knowledge on this topical issue by presenting and discussing relevant findings from psychological research over the past one and a half decades or so.

A Short History of Mother Tongue Education in Ghana

Ghana is chosen as a typical developing country where mother tongue-foreign language (English) education is a colonial heritage. It is on record that the use of the mother tongue in education in Ghana was never encouraged by her British colonial master although the early missionaries made some effort to encourage functional literacy in some selected mother tongues. The language of instruction practice in Ghana has, for a long time, been that the mother tongue be used for the first two or three years as the language of instruction in primary education. For example, the Phelps-Stoke Commission recommended in 1922 the use of the "tribal language" in the lower primary classes and the "language of the European nation in control" in the upper classes in British-held West Africa. There were however, several shifts in policy and variations in its application before independence in 1957.

Post-independence educational reforms did not bring much change in recommendations or actual policies. For example, the Education Review Committee appointed by the NLC Government in 1967 recommended that "a Ghanaian language be used as the medium of instruction for the first three years of the primary school course - the change to English as a medium of instruction should commence in the fourth year whilst the Ghanaian language continues to be studied as a subject; in the metropolitan and other urban areas, the change to English as a medium of instruction may commence earlier than the fourth year of the course" (quoted by Boadi, 1976, pp. 93 - 94). The committee's recommendation was based on the premise that "children learn more easily in their mother tongue and are more easily able to express their ideas and reactions in that language" (quoted by Boadi, 1976, p. 94). The Government's white paper on this recommendation however, curiously proposed that the mother tongue should be used as the language of instruction only for the first year!

In its comments on the recommendations of the Dzobo Committee's report on educational reforms in the 1970's, the Ministry of Education proposed only "a gradual introduction of English as a medium of instruction after the third year of the primary school course" (quoted by Boadi, 1976, p. 99). This was somewhat a surprising proposal because a UNESCO conference in Paris in 1972 had concluded that "ideally, the medium of instruction for a child living in its own language environment should be the mother tongue" (quoted by Bamgbose, 1976, p. 11), and recommended that the mother tongue should be used as the medium of instruction for as long as possible.

The Problem

The language of instruction policy in Ghana then has been to (over) emphasize the use of English as the medium of instruction in our schools, apparently because, apart from practical problems envisaged, it is politically more expedient to maintain this status quo. In fact, in Ghana, as in many other developing countries, English is the single most important factor in education in the early school years and proficiency in English is sometimes assumed to imply high intelligence.¹

Although English is more vigorously taught more than any other subject in the primary school curriculum and is used as the medium of instruction from primary Four through secondary school to the University, it is an open secret that proficiency in English among school children leaves much to be desired. In fact, in the primary schools, and to some extent in the secondary schools, children are simply inept in English. Despite the emphasis that is placed on the study of English, it is still a weaker language for most children. The nagging question is: how do children acquire concepts through the medium of a language in which they are inept?

Findings From Psychological Research

From the evidence gathered from psychological research, very little or no learning may take place for the child who is instructed through the medium of a language in which he is inept. It is clear from some of these studies that both English and the mother tongue may be used in the acquisition of basic concepts, with the stronger language (the mother tongue) mediating learning in English. The mediation could be phonological, structural or semantic in form and could also be overt or covert. The ensuing discussion will be restricted to semantic information since this is the area that is directly relevant to the acquisition of concepts.

An interest in the acquisition of concepts should obviously also imply an interest in how such acquired concepts are stored and retrieved from memory - that is, we should be interested in memory for words and concepts. The mental representation of words and their meanings of the concepts which are the units of our thought and the words we use to express these concepts is referred to as semantic memory. The study of semantic memory is not an easy matter even in the case of the monolingual. For example, it is not easy to determine how this semantic memory is organised, that is, the sort of interrelationships that exist among words and concepts. For the bilingual, the problem becomes more complicated. For example, among many competent bilinguals, the two languages may be kept separate but translations can be found for words in either language. Many bilinguals also have concepts which are unique to one language. For example, the concept of "atomic fusion" may be unique to the English language for a Ghanaian scientist.

Recently however, serious attempts have been made to study the semantic memory of bilinguals. Two hypotheses have emerged on research into bilingual semantic memory. One hypothesis that we may conveniently call the "single (common) storage hypothesis" asserts that there is a common store of information that the two languages merely tap (Anderson, 1976; Anderson & Bower, 1973; Kintsch, 1974; Norman & Rumelhart, 1975). A corollary of this viewpoint is that the language of acquisition of such information is not important. Information once stored in one language is easily available in the other, presumably through translation.

The second hypothesis that we may call the "dual (separate) storage hypothesis" holds that there are separate storage systems for bilinguals. Theorists and researchers clinging to this viewpoint regard acquisition of information as language - or means-dependent (Kolers, 1963, 1978; Kolers & Gonzales, 1980). According to this viewpoint, information stored through one language may not be easily available in the other (Kolers, 1964).

Research into bilingual semantic memory has paid more attention to the relationship between the linguistic systems and the underlying conceptual (storage or representational) systems the languages can be used to express. It has been suggested in this regard (Opoku, 1976, 1980) that there could be a single (common) representational system and yet the linguistic systems could be kept separate or independent - each language merely taps a common store of experience without linguistic interference. An example here is the bilingual who learns his two languages simultaneously during childhood in the same cultural context from parents who do not speak one another's language. There could also be a common representational system with dependent linguistic systems. An example here will be the bilingual who learns one language (usually a mother tongue) during childhood and learns a second language at school using the associative (indirect) method (for example: Arrogance - *Ahantaa*; Paper - *Krtaa*, and so on, for a Twi-English bilingual child). Most bilinguals in developing countries fall into this latter category.

On the other hand, dual (separate) representational systems imply great separated linguistic systems and each language will tap its unique experience. An example here will be the bilingual who learns his two languages in two distinct cultural contexts without using the associative method. It has to be pointed out however, that because of the universality of some human experiences, separation of representational systems cannot be absolute - certain experiences will be common to both languages while other experiences will be unique to either language (Opoku, 1985a).

Several methods have been used to test the single and dual storage hypotheses. One method has used the bilingual's ability to switch between languages. Using this method, Kolers (1966) found that it took bilinguals longer time to read aloud mixed-language texts than texts in either

language, thus supporting the dual storage hypothesis. Other researchers have used a word association technique - giving a word and asking for the first word that occurs to the individual - in several switching conditions. Taylor (1971), using this technique, showed that bilinguals found it easier and preferred making intralingual associations (associations with the stimulus and response in the same language) than interlingual associations (associations with the stimulus in one language and the response in the other language), thus again supporting the dual storage hypothesis. However, according to McDonough (1986), other investigators (e.g. Neufeld, 1976) found contradictory results using the switching technique.

Studies conducted into bilingual representational system in Europe and the Americas have however, not paid much attention to the degree of cultural congruence between the two languages of the bilingual. Clearly, English and French, for example, have more in common in cultural representations than English and an African language such as Twi. Thus, while there could be more in common in representations of concepts in English and French, there could be comparatively less in common in representations of concepts in English and Twi owing to the greater cultural dissimilarity between an English and an African culture. Consequently, different meanings could be attached to translation equivalent lexical entries in English and Twi or even that translation equivalent lexical entries may be non-existent for certain concepts in the two languages for a competent adult Twi-English bilingual. For example, in the English language, "uncle" denotes both "father's brother" and "mother's brother" whereas in the Twi language "uncle" denotes only "mother's brother". "Dog" denotes the same animal in English and Twi but the emotional (connotative) reactions associated with the concept "dog" may be different in English and Twi languages; in English "dog" may connote "a friend and a companion" while in the Twi language it may connote "a hunting animal".

It has been hypothesized that competent adult bilinguals in developing countries who use English as a second language must necessarily possess representational systems that are somewhat more separated than the representational systems of a French-English bilingual for example. Such separated representational systems was however, hypothesized (and supported by findings) as having developed from a common representational system. Such a common representational system is manifested at the early stages of second language learning where low proficiency in and the associative method of learning and teaching the second language at school requires the second language learner to "search" for translation equivalent representations in the mother tongue representational system for words and concepts encountered in the second language (Opoku, 1983).

In effect, a continuum from common to partially separated representational systems has been postulated for bilinguals in developing countries such as Ghana. In the past several years, I have been engaged in research to find out the psychological and educational implications of learning through the medium of a second language (English) and the mother tongue.

In two of such studies, competent adult bilinguals (University undergraduates) were operationally categorized as "low" or "high" in separation of representational systems on word association tests in English and the subsequent performance of the two groups on learning and recall tasks was measured. Findings showed that those categorized as "low" in separation benefitted more on inter-lingual learning and recall task than those categorized as "high" in separation, implying greater interdependence of the two languages during learning for the "low" separation group (Opoku, 1982; 1985b).

It was also demonstrated on a sentence learning task involving the learning of translation equivalent bilingual sentences in English and the mother tongue (Yoruba or Twi), that bilinguals at higher levels of proficiency in English utilize semantic cues more in transfer of learning² from one language to the other than those at lower levels of proficiency in English. In fact,

young children with about six years formal educational experience do not benefit from obvious semantic cues provided them, apparently because of their ineptitude in English, their second language (Opoku, 1987, 1992). This is in spite of the fact that developmentally, children at this level of educational experience are considered to possess comparatively less separated representational systems, (i.e. to be "low" in separation) and should, have benefitted more on this task, going by previous findings (Opoku, 1982, 1985b). It appears then that the children's ineptitude in English masks any facilitative influence of one language on the other during learning.

In all the studies referred to above, it was observed that the semantic influence of the mother tongue on English was greater than the influence of English on the mother tongue for those who are proficient or are at a moderate level of proficiency in English (University undergraduates and secondary Form 4 students), implying that the mother tongue was still a stronger language at even the University level.

DISCUSSION, CONCLUSIONS AND IMPLICATIONS

We have observed that children who are fluent in the mother tongue and who acquire English for the first time at school show development from a common representational system to partially separated representational systems with increasing proficiency in English, their second language. We have also observed that a direct implication of movement away from a common representational system is a movement away from dependent to independent linguistic systems. We have again observed that for groups of competent adult bilinguals who are relatively different in the degree of separation of their representational systems, those categorized as "low" in separation benefit more on interlingual learning and transfer tasks than those categorized as "high" in separation. On the other hand, young children who are developmentally considered to be "low" in separation do not seem to derive any benefit on these tasks while adults considered to be "high" in separation do benefit. Taken together, these findings mean that the reason why young children do not derive any benefit is due to their low level of proficiency in English. Although such children do possess more fused representational systems, they also seem to possess independent, albeit spurious, linguistic systems.

What are the educational implications of the findings reported here? We have observed how the language of instruction practice in Ghana and, in fact, in many developing countries requires that the child should be instructed through the medium of English or the second language after only about two or three years at school. Clearly, because of the child's ineptitude in English or the second language, much thinking is carried out in the mother tongue rather than in English or the second language. One educationist, C.J. Dodson wrote in 1962:

the second language learner relies initially on concepts thought in his native language when he is learning the meanings of foreign language statements he hears. Only after repeated practice and application of the second language statements does he begin to rely less and less on concepts thought in his mother tongue until eventually he is able to 'think' in his second language. (Quoted by Titone, 1964, p. 19).

Findings from the hypothesis tested that there is development from a common representational system to partially separated representational systems with increasing proficiency in English with consequent separation of linguistic systems (Opoku, 1983) support the above

view expressed by Dodson. Much of what is taught and learned through the medium of English may therefore be overtly or covertly referred to the more developed mother tongue representational system for semantic analysis and interpretation and then "translated" to English if a response is required in English. Thus, much learning at a low level of educational experience may involve **SEMANTIC TRANSFER** from English to the mother tongue and from the mother tongue to English. If school children at this level are inept in English, then there may be little, if any, of such semantic transfer and efforts made to teach these children to acquire concepts through the medium of English will be fruitless. The finding that the influence of the mother tongue on English is greater than that of English on the mother tongue for even moderately competent bilinguals makes the situation worse for school children trying to acquire concepts through the medium of English.

The difficulty experienced by school children in acquiring basic concepts in Science and Mathematics through the medium of English may also be partly due to the unavailability of equivalent concepts in the mother tongue, even for those children who are moderately intelligible in English to derive some benefit from semantic transfer.

One may ask the obvious question: Is such semantic transfer a real and observable phenomenon? There is an indirect evidence about the reality of such semantic transfer. This evidence is from observation of intrusion errors or linguistic interference from one language to the other when a bilingual is functioning in one language. According to Fyle (1976), language interference occurs for children when "in speaking or writing (English), children make errors in their use of English which can be traced to the structural, phonological or semantic patterns of their own language" (p. 49). For example, the following sentence: "He drank wine in front of the television" uttered by a competent adult bilingual speaker when he really meant: "He was seen drinking wine while taking part in a television programme" clearly shows both structural and semantic transfer from the mother tongue (Yoruba) to English. Another indirect evidence is the everyday observation of long pauses or hesitation over choice of words when bilingual children, and to some extent, adults are functioning in English or a weaker second language. A more direct and objective test for the existence of semantic transfer however, will be to ask bilingual subjects themselves to verbalize their thought processes during learning in English and the mother tongue.

It is being suggested here that the so-called linguistic interference or intrusion errors may not represent errors *per se* but rather a manifestation of a **LEARNING STRATEGY** adopted by bilingual speakers with a low level of proficiency in a second language. This strategy which may involve frequent reference of second language words and concepts to the mother tongue representational system and that we may therefore refer to as **MOTHER TONGUE MEDIATIONAL LEARNING** may not represent the most efficient way to acquire concepts for it will retard the early movement away from a common representational system to partially separated representational systems and the accompanying independent linguistic functioning. A way of testing this proposal will be to observe the frequency of intrusion errors for children at different levels of proficiency in English or the second language. Such errors should be more common for those at lower levels of proficiency in English than those at higher levels of proficiency in English.

Recommendation

What must we do then under our present circumstances?
There are two options open to us:

1) We may continue to use the mother tongue as a medium of instruction throughout the primary school years while at the same time encouraging an intensive and effective study of English as a second language throughout the primary and secondary school years. This will ensure that school children can function intelligibly in English when it is introduced as the medium of instruction in the secondary school with minimal or no recourse to mother tongue mediation. In this regard, the indirect associative method of teaching and learning English will have to give way to more direct methods and we should encourage the simultaneous use of English and the mother tongue in literate homes.

2) A second but less attractive option is to continue with the present policy of three years primary education in the mother tongue with English being more intensively and effectively studied as a second language. We could then deliberately encourage the mediation of English by the mother tongue for all concepts in English. This option, though it has been tried elsewhere, is not attractive because of the awkward nature of "creating" a new vocabulary in the mother tongue. Ultimately, we need to educate our children to acquire greater separated representational and linguistic systems. Policy makers in developing countries may therefore take a critical look at the first option if we want to give any meaningful education to our children.

NOTES

1) But this is far from the truth. While early proficiency in English is obviously an asset toward better performance in public examinations because of the high verbal content of such examinations (conducted in English), such superiority in performance by those with early proficiency in English is not sustained throughout the school years (see for example, Addae-Mensah, 1975).

2) Learning some material in one language and then learning the translation equivalent material in the other language and measuring the amount of "savings" from first learning to second learning. Operationally, there is transfer if the second learning is found easier than the first learning, and no transfer if the second learning is found more difficult than the first learning, or the first and second learning are found equally difficult.

REFERENCES

- Addae-Mensah, I. 1975 The role of language in intellectual development: How relevant is Pearson's thesis to the Ghanaian situation? *Universitas*, 4, 175 - 180.
- Anderson, J.R. 1976 **Language, memory, and thought**. Hillsdale, NJ. : Lawrence Erlbaum Associates.
- Anderson, J.R. & Bower, G.H. 1973 **Human associative memory**. Washington D.C.: V.H. Winston.
- Bamgbose, A. (ed.) 1976 **Mother Tongue Education: The West African Experience**. London: Hodder & Stoughton.
- Bamgbose, A. 1976 Introduction: The changing role of the mother tongue in education. In A. Bamgbose (ed.) **Mother Tongue education: The West African Experience**: London Hodder & Stoughton, pp. 9 - 26.
- Boadi, L. 1976 Mother tongue education in Ghana. In A Bamgbose (ed.) **Mother Tongue Education: The West African Experience**. London: Hodder & Stoughton, pp. ;83 - 112.
- Fyle, s C. 1976 The use of the mother tongue in education in Sierra Leone. In A. Bamgbose (ed.) **Mother Tongue Education: The West African Experience**. London: Hodder & Stoughton, pp. 43 - 62.
- Kintsch, W. 1974 **The representation of meaning in memory**. Hillsdale, N.J.: Lawrence Erlbaum Associates.
- Kolers, P.A. 1963 Interlingual word associations. *Journal of Verbal Learning and Verbal Behaviour*, 2, 291 - 300.
- Kolers, P.A. 1966 Reading and talking bilingually. *American Journal of Psychology*, 79, 314 - 319.
- Kolers, P.A. 1978 'On the representations of experience'. In D. Gerver & W. Sinaiko (ed.) **Language Interpretation and Communication**. New York: Plenum. pp. 245 - 258.
- Kolers, P.A. & Gonzalez, E. 1980 Memory for words, synonyms, and translations. *Journal of Experimental Psychology: Human Learning and Memory*, 6, 53 - 65.

- McDonough, S.H. 1986 **Psychology in Foreign Language Teaching**. London: Allen & Unwin.
- Norman, D.A. & Rumelhart, D.E. 1975 **Exploration in Cognition**. San Francisco: W.H. Freeman.
- Opoku, J. Y. 1976 **The influence of English as a Foreign Language. A Study of Bilingual and Conceptual Systems in Twi-English Speaking Ghanaian School Children**: Unpublished Ph.D. thesis, University of Aberdeen.
- Opoku, J. Y. 1980 Bilingual representational systems and the value of instruction through a foreign language. **Journal of Language Arts and Communication**. 1 (2), 79 - 92.
- Opoku, J. Y. 1982 Bilingual representational systems and interlingual transfer of learning. **Journal of Cross-Cultural Psychology**. 13 (4), 470 - 480.
- Opoku, J.Y. 1983 The learning of English as a second language and the development of the emergent bilingual representational systems. **International Journal of Psychology**. 18, 271 - 283
- Opoku, J.Y. 1985a Developmental acquisition of separated representational systems for bilinguals in developing countries. **Nigerian Journal of Psychological Research**, 1 (1), 1 -20.
- Opoku, J.Y. 1985b Bilingual representational systems in free recall. **Psychological Reports**, 57, 847 - 855.
- Opoku, J.Y. 1987 Second language proficiency differences in the learning of semantically-equivalent bilingual sentences. **Applied Psycholinguistics**, 8, 75 - 84.
- Opoku, J.Y. 1992 The influence of semantic cues in learning among bilinguals at different levels of proficiency in English. In R.J. Harris (ed.), **Cognitive Processing in Bilinguals**. Amsterdam: North-Holland Elsevier Science Publishers, pp. 175 - 189.
- Taylor, I. 1971 How are words from two languages organised in bilinguals' memory? **Canadian Journal of Psychology**, 25, 228 - 240.
- Titone, R. 1964 **Studies in the Psychology of Second Language Learning**. Zurich, Pas Verlag.