

Some Reflections on the Relationships between Bilingualism, Intelligence Quotient (IQ) and Error Making in Teaching of English as a Foreign Language in Mali

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Abstract—This paper focuses on the relationships between bilingualism, intelligence quotient (IQ) and errors made by learners in their attempt to master the rules of the target language(s). The first part of the paper explains the true nature of bilingualism contrarily to the controversial and stereotyped definitions found in the previous literature of the 1950's: the author refers to Weinreich's and Suzan Ervin Tripp's definitions and explains that bilingualism is an asset instead of being something negative. The second part deals with the elusive, multifaceted and controversial nature of the concept of intelligence quotient and as a result, the author talks about the different trends in the literature related to intelligence quotient (IQ) and shows that the complex relationships between linguistic performance and intelligence quotient are co relational but not causal. The third part of the paper deals with the negative perceptions of mistakes and errors in second or foreign language learning. Actually, mistakes and errors are part and parcel of the learning process and must not be considered as signs of lack of intelligence on the part of the learners. Some interim constructions made by the learner are rather synonymous with linguistic creativity and the author alluded to the differences of perceptions between Anglophones and Francophones about the notions of mistakes and errors. In conclusion, the author urges learners and their parents not to have negative views about bilingualism, because he thinks that bilingualism is synonymous with linguistic creativity and open mindedness.

Index Terms—intelligence quotient, linguistic creativity, bilingual schools, complex relationships, categorization of bilinguals, academic achievement

I. INTRODUCTION

There were many controversies around the relationships between bilingualism and intelligence (IQ) because people did not know the true nature of bilingualism nor did they know the real nature of intelligence (IQ). In the past, people wrongly believed that acquiring or learning two or more than two languages would have a negative impact on the learner's intelligence because they did not know about the functioning of the human brain and thought that the more languages we learn the greater the probability of not being able to understand other subjects such as mathematics, biology, physics, chemistry, history or geography. This was not true. The whole picture was compounded by the fact that a new learner, in attempting to master the rules of a target language, will definitely make mistakes and errors, hence the relevance of the parents' questioning about the necessity for sending their children to learn another language.

Thanks to the progress made in linguistics and in the neurosciences, we know nowadays that the negative impact of bilingualism on intelligence (IQ) is not true. We also know that the relationships between bilingualism and intelligence (IQ) are co relational but not causal. Actually, this paper intends to show that instead of having a negative impact on intelligence (IQ), bilingualism is an asset because it is synonymous with biculturalism, linguistic creativity and open mindedness. Parents reluctant to let their children learn a second or foreign language or send them to bilingual schools are urged to change their opinion.

It is a truism to say that Mali is a multilingual country, as there are thirteen national languages spoken in the country. Moreover, those who attend school have to learn French and English in addition to their mother tongue. Learning a foreign language represents a significant challenge because of the adjustments it requires from the learner at the psychological, linguistic, cultural and neurolinguistic levels. Young foreign language learners in Malian schools are faced with difficulties in their classes, and that is why the metaphor of the first man walking on the moon is an apt way to describe those difficulties.

Despite those challenges, pupils in Mali seem to be very enthusiastic to learn English in seventh, eighth and ninth grades. Unfortunately, except for a few, this enthusiasm dwindles at the high school level (grades 10 through 12) and learning English becomes problematic, and even boring, when our pupils reach the university level.

The decline in interest for the English language on behalf of Malian students may be attributable, among other things, to their lack of motivation, the weak weight of English as a subject, the few number of hours reserved for English in

the curriculum, overcrowded classrooms, a lack of appropriate books and documents in the libraries (if they even exist at all), low teachers' salaries, (in comparison to their counterparts in the sub region), the mistreatment of students by teachers (for example, using stereotypes and negative labels for students who are not performing well, without mentioning the teachers' attitudes in playing favorites or harassing some students at will, etc.), the list is far from being exhaustive.

Not being able to deal with all the issues pertaining to the root causes for our students' disenchantment, this article focuses on the influences of the bilingual context of Mali on students' learning of English, and the ways errors are generally negatively perceived and treated by neophyte English teachers. In short, those teachers quite often misunderstand the relationships between bilingualism, intelligence quotient (IQ) and error making, and it is well worth clarifying the controversial and complex relationships between the three concepts.

II. METHODOLOGY

We will first have some definitions of the different concepts used in this paper before proceeding on with a brief review of the literature for each concept and their different implications in Malian classrooms based on the experiences of the author. As a result, the author will rely on his previous works as a researcher and on the thesis written by one of his students. In addition, he will also rely on some new findings in the neurosciences.

To that effect, it is worth mentioning that Gueye (1980) studied the nature and types of errors and mistakes made by Malian students learning English as a foreign language at the Ecole Normale Supérieure of Bamako and that Assitan Coulibaly (1983) described the types of motivation prevailing among a group of students learning English as a foreign language in the same school. On the basis of those experiences, the author intends to give some advice to the new English teachers in Francophone Africa in general, and in Mali in particular.

DEFINITIONS OF TERMS:

A) BILINGUALISM

According to Weinreich (1953), "bilingualism is the act of alternatively using two or more than two languages". In fact, Weinreich and Suzan Erwin Tripp categorized bilinguals and this categorization can be rapidly summarized as follows:

- 1) Compound bilinguals are people who do not master the rules of either language either the rules of the language of instruction (in our case, French) or those of the target language (in our case, English) and mix up those rules.
- 2) Subordinate bilinguals are people who just master the rules of one language and mix up these rules with those of the target language, and
- 3) Coordinate bilinguals (also wrongly called balanced bilinguals because one may be balanced from the top or from the bottom) are people who master both languages perfectly well and keep them separate. They may mix the two languages when code switching either voluntarily or when forced by the situation under certain circumstances.

Of course, this categorization of bilinguals has been criticized for not taking into account the fact that language learning is not static but is rather dynamic. We are not going to enter into that debate here. We will simply acknowledge that a compound bilingual may become subordinate and even coordinate by making lot of efforts, whereas a coordinate bilingual may become subordinate or even compound (though this is rare) through lack of practice of both languages. The focus of our study will be about 'compound' and 'subordinate' bilinguals because we surmise that our pupils and students have not yet reached a certain level of proficiency so as to be considered 'coordinate'.

With regard to the relationships between bilingualism, cognitive development and school achievement, we summarize Cummins' findings (1976), see Kangas (1981) showing that coordinate bilingualism (Cummins referred to it as 'balanced') may have positive cognitive effects on academic achievement, whereas subordinate bilingualism (which he called 'dominance' in one of the languages) may have neither positive nor negative cognitive effects on academic achievement. In the same vein, Cummins thinks that compound bilingualism (he calls it semi-lingualism or low levels in both languages) may have negative cognitive effects on academic achievement. Cummins' theory is known as the "Threshold hypothesis".

Actually, the relationships between language and Intelligence Quotient are not crystal clear; they become compounded when it comes to talking about the relationships between bilingualism (or rather multilingualism, in the Malian case) and IQ. The picture becomes even more blurred when we look at those relationships from the angle of error making which is the nexus between the two. To clarify things, the aforementioned concepts are addressed in detail below.

B) INTELLIGENCE

The first psychometric tests were inappropriate and unfair towards bilingualism and no wonder that they found a negative relationship between bilingualism and IQ. Their samples, experimental design as well as their methodologies were quite questionable. That was in the 1920's when D.J. Saer found that rural monolinguals had a superior IQ to rural bilinguals.

In the 1960's, the second wave of psychometric tests found that bilingualism had neutral effects on IQ. W.R Jones (1959) found that bilingualism had neither negative nor positive effects on IQ.

The breakthrough came with Peal & Lambert (1962), when they found that bilinguals have

1. Greater mental flexibility

2. The ability to think more abstractly, less concretely, more independently of words, resulting in superiority in concept formation

3. A more enriched bicultural environment which benefits IQ and

4. Positive transfer between languages benefiting verbal IQ.

Even these findings were subject to controversy in some linguistic circles. In a nutshell, the debate regarding bilingualism and IQ still goes on. The studies have shown that bilinguals are better in divergent thinking (one question with many possible answers) whereas monolinguals are better in convergent thinking (one question requiring only one correct answer).

In the present study, we will just say that language or speech is not synonymous with IQ, because IQ is just a portion of general intelligence which encompasses other types of intelligences. Linguistic intelligence can be determined only when we measure students' competence and degree of fluency in reading, writing, speaking and listening each having sub-skills of vocabulary, grammar, pronunciation, meanings and style. Let us not forget that IQ is just a portion of general intelligence and must not always be used as a yardstick for an individual academic performance does not compulsorily reflect the overall eventual performance of a person in real life situations.

Since time immemorial, attempting to know the true nature of intelligence has been a challenge and a major concern for both teachers and parents. For example, psychologists like Francis Galton (1893) who attempted to measure intelligence by testing people's abilities to see, hear and be strong. Another psychologist by the name of Alfred Binet (1905) devised a test to measure complex thinking and judgment skills.

Specialists like Charles E. Spearman (1904) found that we have to take into account two abilities when it comes to measuring intelligence; a general ability for all tasks requiring the use of intelligence labeled 'g', and specific abilities to resolve different tasks. Thus, intelligence was seen as being a measure of one's ability to solve problems. As for Guilford (1982), he thinks that there is a 150 factor model of intelligence. He lists 5 operations (cognition, memory, divergent production, convergent production and evaluation) and 6 products (units classes, relations, systems, transformations and implications), hence $5 \times 6 = 30$ mental abilities. In other words, for Guilford, we need 30 operations to determine whether a person is intelligent or not. Another specialist by the name of Louis L. Thurstone (1940) emphasized that we must consider intelligence in terms of semantic, mathematical and spatial ability. He listed seven mental abilities. Finally, Howard E. Gardner (1990) believes that when addressing the issue of intelligence, we must rather talk about multiple intelligences such as logical and mathematical intelligence, linguistic intelligence (which is our concern with the example of English classes in Mali), spatial intelligence, interpersonal intelligence (being open-minded and easily understanding others, i.e. diplomacy), bodily-kinesthetic intelligence, musical intelligence, etc.

According to the neurosciences, the brain contains more than one hundred billion neurons and billions of neurons have to bombard each other to produce just a single sentence like 'My name is Fatoumata' or 'I want to drink'. The same neuroscientists state that the left part of the brain processes the mother tongue whereas the right part of the brain processes second and foreign languages. In short, the human brain is divided into different areas with specialized functions for each area.

As we see, intelligence in scientific terms is a very complex issue and represents a real challenge, and it is only popular beliefs which equate it with language or speech. The beginning teacher must understand that the relationships between bilingualism and intelligence are even more complex because not only did the psychometric specialists ignore the true nature of intelligence (or IQ), but they were also completely ignorant about what bilingualism meant.

As anecdotes, I used to say in my classes that if a person mistakenly says 'la plafond' or 'le fille' instead of saying 'le plafond' or 'la fille', that person will never be forgotten and will be remembered for a lifetime as 'unintelligent', which is not really the case. This is why I rapidly reject the fact of equating IQ with speech, because the notion of intelligence is so complex that even psychometric specialists, that is, specialists measuring 'intelligence' did not agree among themselves on definitions of intelligence. In fact, it is now widely understood that intelligence is relative and depends on a number of factors including context, heredity, and one's learning environment.

We remind young Malian teachers that we are not rejecting evaluation, quite the contrary. We do believe that evaluating students' performance is an important part of a teacher's job in the sense that it is required by the school administration, the parents and even the society at large. It also determines the qualifications of students to pass from one grade to the next.

What we reject is using negative stereotypes and labels, derogatory remarks as "unintelligent" in a classroom just because they didn't "correctly" use a word or an expression. This is demotivating and may negatively affect student personalities and psyche for a lifetime; clearly a situation that any teacher should want to avoid. We do not want our students to unjustly suffer from those stigmas in our English classes.

C) MOTIVATION

In fact, it is worth mentioning at the outset that motivation plays a key role in language learning because it is the inner driving force which encourages the learner to want to learn or not to learn. Specialists in education used to speak about the existence of "intrinsic motivation" or in class motivation to get good grades and pass exams, and "extrinsic motivation" which is motivation outside the classroom class pushing the learner to do research on his/her own in the library or at the cultural center, etc... Nevertheless, there are three kinds of motivation recognized in the TEFL (Teaching of English as a Foreign Language) literature:

a) Instrumental motivation which pushes the learner to want to learn in order to climb the social ladder. In other words, the student wants to learn the target language for material purposes to become, for example, a teacher of English, a translator or an ambassador. He makes a living out of the profession.

b) Integrative motivation which encourages the learner to want to learn in order to feel closer to the speakers of the target language through their literature, music, films, arts and theater. Here, there is no loss of identity for the learner as he/she just wants to share with the native speakers their culture and civilization in the target language. The learner keeps his/her identity and does not make a living out of it.

c) Social group identification motive is the type of motivation encouraging the learner to learn a variety of the target language and consider speakers of that variety as models. There is loss of identity by the learner because he/she wants to look like or resemble the model at any cost.

Finally, there is another type of motivation that the author of this article discovered in Mali when supervising a thesis written by one of his students named Assitan Coulibaly who did research on motivation at the Ecole Normale Supérieure of Bamako (Teachers' College) in Bamako in the 1980's. This type of motivation represents what the two researchers termed

d) "Hedonistic or epicurean motivation", a type of motivation characterized by the fact that students are learning English just for the sake of pleasure seeking.

D) MISTAKES AND ERRORS

As for errors, they too, have been a major concern for linguists and teachers alike. I would add that no one is immune to error making and even native speakers make mistakes, which are part and parcel of the learning process. Errors occur at the syntactic, semantic and stylistic levels. They must not be viewed negatively, yet this is unfortunately the case for some teachers of English in Mali.

Actually, this statement leads me first and foremost to give a definition of mistakes and errors and tell about their differences. On the one hand, a mistake is just a slip of the tongue or of the pen and self correction is possible. For example, when someone says 'the boy are coming', he may be able to say 'the boy is coming' or 'the boys are come' once we draw his/her attention that there is something wrong with the statement. Self-correction is possible with mistakes. A mistake is random and accidental. On the other hand, an error is a violation of the code of the target language and is systematic meaning it repeats itself. In other words, when a person says 'the boy are coming', that person will keep on repeating it more than 100 times because it shows the degree of mastery of the target language by the speaker. Self-correction is not possible with errors unless the speaker internalizes new 'knowledge' enabling him or her to say 'the boy is coming' or 'the boys are coming'. Before moving forward, remember that our high school and university students are bilingual or multilingual, because in addition to their mother tongues, they speak one or more than two national or local languages, even before starting to learn French, English or German at school.

It should be noted that in the TEFL (Teaching of English as a Foreign Language) literature, we have the following types of errors:

1) Intra-lingual errors, which are errors made by both monolingual and bilingual speakers and are due to the code of the target language or to an incomplete mastery of the rules of the target language. They are universal and common to both native speakers and second or foreign language learners. For example, both a native speaker of English and a non native speaker may mistakenly say 'he speak' instead of saying 'he speaks'. Intra-lingual errors may also be due to overgeneralization, especially on the part of young native speakers who would say 'he goed' just because we say 'he walked'. Intra-lingual errors generally represent 80% of the mistakes made by an individual

2) Inter-lingual errors also known in the literature as linguistic interferences. They are due to the imposition of the rules of the previously known language(s) on those of the target language. They are made by bilingual speakers only. When a francophone writes or says 'blacks shoes', it is just because he thinks of the possibility of saying or using 'chaussures noires' in French. When a student also says 'we killed two muttons during Tabaski', it is obvious that he/she is imposing the French 'on a égorgé deux moutons' forgetting that 'mutton' means meat and that he should have said 'we slaughtered two rams or two sheep during Tabaski'. If a Bambara speaker in his/her (Bambara is taken here as it is a lingua franca in Mali) says 'my small father' or 'my small mother', instead of saying 'my uncle' or 'my aunt', he/she is just imposing his/ her Bambara language on English. It is important to note that the imposition may cause some communication breakdown with the native English speaker especially when the Bambara speaker uses sophisticated constructions such as 'we ate rice to be dead' meaning we have eaten our fill' or 'the meal has really filled us up'. Another misunderstanding with the native English speaker may come from constructions like 'My sister was married and was found home' when the Bambara speaker just wanted to stress that 'his sister was married and was found to be a virgin the wedding day'. The native Bambara speaker who says 'in the mouth of our house' instead of 'in front of our house' is definitely making a word for word translation! Needless to say that one has to be familiar with the Malian and Bambara culture to understand what our (native Bambara) students generally intend to say.

3) Omissions which are neither intra-lingual nor inter-lingual and they are just in between. Obviously, they are due to a lack of attention, of concentration or to fatigue. Using one "d" in "address" when the student bluntly writes 'adrese, it becomes a linguistic interference from French but an omission when the "e" is missing, while attempting to write the English 'address'. Examples of doubling the "d", "p", or "t" are legion in French, and one has to be careful in order to make a difference between a linguistic interference and an omission. The borderline in this case is very thin.

4) Unclassified errors are errors which cannot be explained. A learner may say, for example, 'he can't swim' and this type of error is not classifiable nor does it make sense. Confusing the use of the gerund and of defective verbs cannot be accounted for. Errors are said to be idiosyncratic because they reflect to some extent the personality of the learner and they are really so in the case of unclassified errors. Actually, learners learn differently and even two identical twins may learn differently.

We must bear in mind that some errors, if not corrected early, become fossilized because it will not be possible to get rid of them. We generally find fossilized errors in mispronunciations (for example, failing to adequately pronounce the "th" sound in 'Thursday' or 'throughout' is a mistake common to most francophones, especially Malians).

III. RESULTS AND ANALYSIS

Gueye (1980) found that the great majority of errors made by three linguistic groups of students (Bambara, Fulani and Songay) learning English as a foreign language at the Ecole Normale Supérieure were intralingual, and the second highest percentage of the errors made by the students came from interlingual errors or linguistic interferences of the French language and of the students' native language and English. As for omissions, they came in fourth position and the unclassified errors came in fifth position. Errors occur at the phonological, syntactic, semantic and stylistic levels of those students' written discourse.

Mistakes are not made by students only as some errors may be due to the lack of preparation by the English teacher himself/herself, who will inconsistently ask his/her student to pronounce the term "door" as "dor" (my computer doesn't allow me to write the right phonetic transcription) today, "dour" the next morning and "dar" the third day. Pronouncing the words "cathedral", "throughout", etc... are problematic for most Malian teachers and no wonder that we teachers are at the source of what is called teaching induced errors, especially when we do not prepare our lessons well. We have come full circle regarding the relationships between IQ, bilingualism and error making. Instead of being causal, their relationships are co relational. The only piece of advice for the English teacher is to treat the errors very tactfully without hurting the students and by giving positive feedback to the latter ones.

Assitan Coulibaly (1983) found that apart from being driven by the classical well known types of motivation i.e. instrumental, integrative and social group motive, there exists another type of motivation that she called "hedonistic or epicurean motivation.

IV. DISCUSSIONS AND CONCLUSIONS

Of course, it is worth reminding new English teachers that some pedagogical tools such as Contrastive Analysis, Error Analysis, The Inter language Theory and others have been designed to help learners reduce the number of their errors and minimize them.

Contrastive Analysis is a predictive tool and states that whenever two languages are in contact, it is possible to determine and predict problem areas that the students will face by making the sum and the differences of the similarities and dissimilarities between the two languages.

Error Analysis consists in detecting, counting and classifying the errors made by the learners and proposing solutions for them.

Inter language theory admits the fact that learners make interim constructions which are neither their native language nor the target language. They are signs of linguistic creativity but may be considered as errors by some specialists.

Those theories have their limitations, too, because it is impossible to suppress errors and mistakes. They are part and parcel of the learning process and are unavoidable. We have to accept errors and mistakes as something natural and normal. A learner who does not make mistakes and errors is a 'dangerous' learner because he looks like a time bomb that will explode one day unexpectedly. Let us then put up with our learners who have strengths and weaknesses as well because as a saying goes, 'To err is human but to love is divine' " L'erreur est humaine mais persévérer dans l'erreur est diabolique".

Some may wonder why we are making so much effort and giving so much importance to the teaching of English in Mali, a francophone country. We respond by saying that English is an international language and that even illiterate Malian businessmen are using it on a daily basis by exchanging e-mails and faxes with their counterparts all over the world, not to mention Malian intellectuals who are eager to participate in the global culture. Malians travel a great deal and are present on all continents. At the beginning of this article I used the metaphor comparing the difficulty of learning a foreign language to the difficulty of walking on the moon. By the way, there is a well known joke saying that when Neil Armstrong wanted to plant the American flag on the moon, one Malian who was already present there asked him "What are you doing here? Don't you know that a Malian is already here?"

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