Reading: A Psycholinguistic Approach

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Abstract
The psycholinguistic model of reading is defined as the process of creating meaning with print. The brain uses three cueing systems to recognise words on the page during this meaning making process: phonological, semantics and syntactic. Readers use what is in their head (schemata) to make sense of what is on the page. During the process of reading, our eyes fixate on approximately 60% of words on the page (Paulson& Goodman, 2008). Of these fixated words, our eyes usually stop on only one or two letters. Since we can perceive only those things upon which our eyes fixate, it is clear, that our brain fills in the blanks to create meaning during reading. It is clear as well, that the eyes are directed by information in the cortex much more so than information on the page during the act of reading. In this work, the study of reading is analysed from the perspectives of psycholinguistics, linguistics and psychology. The study concludes that the problems associated with reading are partly psychological and appropriate steps were provided to solve these problems.
Keywords- Psycholinguistics, reading, linguistics, psychology.

Introduction
Two separate attempts to define Reading should provide a convenient starting-point for this discussion. Leedy (1998: 22), notes that reading is a matter of searching for the thought that was in the mind of the author and which now lies in the meaning of the words which are before the reader. He maintains that to read, we must process the author's words; we must distil and extract from the words the nugget of thought which the author is trying to express. In the process of being written, the thoughts of the author have undergone a metamorphosis. What started in the thought areas of the author's brain as notions, ideas, thoughts, concepts have come to us as a string of black symbols on a white back-ground, irregularly grouped, and put together according to an accepted and arbitrary formula, involving rules of grammar and rhetoric which we call by the blanket term of writing, or written communication. Braam and Sheldon (1990:79) also defines reading as *the interpretation of reading materials. This interpretation is based on the ability of the reader to understand the purpose of the author as well as what the author is saying. Reading is not only a rapid recognition of verbal symbols but also an understanding of the thoughts and ideas for which they stand.* From our own experiences of what is involved in reading, it is not a mere visit exploration of printed or written materials, but a combined activity of the eye which perceives and explores the verbal symbols, and the mind, which discovers and interprets the thoughts that lie beneath them. Generally speaking, a distinction between reading and studying may be useful, but it is clear that a study of reading, in the sense defined, can hardly be distinguished from a study of efficiency in study techniques.

A Psycholinguistic Approach
 The distinguished psychologist, Osgood, defines psycholinguistics as "the science of encoding and decoding processes in individual communicators (Osgood, 1993:36). For the sake of simplicity, we shall define it as a psychological study of language behaviour. Carroll (1980) correctly defines language as "a socially institutionalized sign system." And Morris, in Signs, Language and Behaviour (2000:18), has suggested five necessary criteria for a language: (1) a plurality of arbitrary signs; (2) having a common or shared significance to a group of individuals, regardless of the situation in which they are used; (3) can be produced by these individuals as well as received; and (4) together constitute a system following certain rules of combination. Whenever the stimuli received or the responses produced satisfy these criteria, the psychologist can say he is receiving "Verbal" behaviour.

A psycholinguistic approach to the study of reading may now be defined, in a very broad sense. It is that approach that enables the problem of reading to be seen from a combined linguistic and psychological view-point, and one that encourages references to relevant psycholinguistic theories and problems. As Osgood suggests, all aspects of psychology can, in fact, be shown to have a bearing on language behaviour, but learning theory and phenomena contribute most heavily to the "psycho" in psycholinguistics.

A Linguistic Approach: A Question Mark

Many people are still suspicious of the contribution that the study of linguistics can make to the study of reading. They argue that the study of reading is essentially a problem in psychology and that the approach had therefore better be psychological rather than linguistic. Unfortunately, too, such scepticism was justified by the publication, in 1981, of the book, *Let's Read: A Linguistic Approach*, of which Leonard Bloomfield and C.L. Barnhart (themselves distinguished linguists) are co-authors. The teaching material in the book was largely experimental, and was designed to teach children to enjoy reading by studying the close correspondence of individual words with sounds, using such sentences as: "Can a big, fat pig jig?" and "Can Dan fan Nan?" Educators rejected this rather childish and excessive pre- occupation with phonology, and also the "linguistic approach" that encouraged it. From the point of view of the adult reader, it is argued that a study of structural linguistics, which some linguists (e.g. Lefevre, 2000) believe to be useful in a study of reading invariably demands slow reading and so there is a danger that a person who has had a rigorous training in this field will tend to be a slow reader. In short, he transfers reading habits that may result from the reading of linguistic literature (such as slow reading, sub-vocalization, vocalization and regression) to his reading of other kinds of material. Such an undesirable effect is not limited to the reading of linguistic literature; it can in fact be associated with the reading of scientific and technical material of many kinds.

Reading: A Psychological Approach

Arguments have also been advanced in favour of a psychological rather than linguistic approach. It is argued that a serious study of reading necessarily involves a study of the nature and symptoms of reading backwardness, and of the techniques for acquiring efficiency in reading. It will also involve the measurement of reading ability. There can be no doubt that the bulk of the work that has been done in these areas was carried out by educationists and psychologists. Indeed, much of the available literature on the subject: reading is psychological, and from that point of view, a psychological approach is inevitable. The study of reading can hardly be distinguished from the study of efficient study techniques. Indeed, educationists and psychologists tend to see the study of reading as essentially an aspect of the psychology of learning and study. Factors such as motivation, perception, attention, thinking, recognition, retention, recall, remembering and forgetting — all of which are important aspects of the psychology of learning, are also essential factors in efficient reading. Moreover, many topics of investigation in educational psychology are very relevant in a serious study of efficiency in reading. These include the following principles of the Gestalt theory of learning in education:
   a) The effectiveness of the "whole to part method" of studying, based as it is on the Gestalt principle that learning should proceed "from the whole to its part," and not vice versa;
   b) The relative effectiveness of the "whole versus part method" of studying;
   c) The effectiveness of the "mediating method", which proceeds from whole to part but allows the marking off of more difficult or unfamiliar parts for more intensive study
   d) The value of "recitation" in studying;
   e) The optimum "practice periods" for effective studies;
   f) Efficient distribution of "practice periods";
(g) The value of over learning;
(h) Speed of learning in relation to retention.

The Case for a Linguistic Approach

In spite of the skepticism about the value of a linguistic approach, and the strong case for a psychological approach, a good case can, in fact, be made for a linguistic approach. For instance, Lefevre (2000: 85) makes the following case:

Traditional reading methodology, however, does not concern itself rigorously with language. Instead it concerns itself largely with psychological problems, with visual perception especially. The question is, visual perception of what, exactly, if not of the graphic counterparts in printed form of meaning-bearing language patterns? To comprehend printed matter, the reader must perceive entire language structures as wholes—as unitary meaning-bearing patterns. Short of this level of perception, the reader simply does not perceive those total language structures that alone are capable of carrying meaning. He may perceive individual words as if words were meaning-bearing units in themselves, most serious of all reading disabilities. Or he may group words usually in structureless pattern-fragments that do not and cannot bear meaning. What such readers do not do is read total language patterns for total comprehension of meaning. The basic assumption is that reading must therefore be rigorously studied in relation to language. Today, rigorous study of language means structural linguistics.

Another strong case for a linguistic rationale for reading has been made by another distinguished linguist, C.C. Fries (1980:36). The author's declared intentions are "to analyse and restate a number of the fundamental questions about reading, not in terms of the procedures of linguistic science but against the background of the knowledge concerning human language which linguistic science has achieved," and "to find not only more efficient procedures and activities through which to build up the basic habits of high-speed recognition responses necessary for reading, but also ways to achieve more complete and efficient total reading performances as an end product."

Fries regards reading as essentially the recognition of the graphic counter-parts of those vocal signals that constitute language. For him, then, learning to read is the process of establishing the necessary recognition habits, and of transferring auditory signs to their equivalent visual signs. He believes that a start has to be made within the framework of those words and grammatical structures which the child has already learnt to introduce into his conversation; learning to read then becomes the adding of one communication skill to another already acquired. If the material presented is within the range of the child's capacity for oral expression, it should present no more difficulty than learning to talk, but difficulties arise when the teaching material is beyond the child's previously acquired command of the spoken language. It is further argued that in the very early stages of a child's attempt to read, the pedagogic value of presenting materials graded and selected on linguistic principles outweighs that of presenting interesting material, though these apparently conflicting principles would have to be reconciled as the child's powers of recognition increase.

Both authors certainly have a good case for a linguistic approach. Macmillan (2000) correctly points out, Lefevre's book supplements Friers's Book by dealing in greater detail with the meaning-bearing structural patterns of spoken and written English and with the importance of intonation, stress, word order, structure words, and word-form changes, as meaningful signals that must be interpreted by the efficient reader. Like Fries, Lefevre believes that efficient reading requires an appreciation of the relationship between graphic symbols and their equivalents in spoken language. Thus he asserts that: "The eye is more fleet than tongue or ear; visual reading can go like wind, with full comprehension, but only if it takes in whole language patterns in its purview."

Apart from an orthodox linguistic approach advocated by experts, there is a linguistically-oriented course of instruction which might prove to be very valuable in a Reading Centre. Such a course would tend to put great emphasis, during a reading improvement programme, on vocabulary expansion, and facility in the use of the appropriate medium of written or oral communication. Courses organized with these ends in view would aim to achieve the kind of programme outlined for the University of Ibadan Reading Centre by Whitehall (1987): Ability to achieve the proper synthesis of speed, rhythm, comprehension and interpretation; ability to read and write in constituent word groups rather than isolated words; ability to grasp by context rather than by "definition"; ability to pick out relevant grammatical cues in passages without distraction from grammatical or lexical irrelevances; ability to follow the linguistic signposts (conjunctions, conjunctive adverbs, parallel substitutes, etc.) in paragraphs and larger units of expression; ability to draw inferences from and through nuances of style

and tone; ability to overcome interference, both lexical and grammatical, from the first language; ability to read "between the lines" but not to talk around or read around the subject.

The Psycholinguistic Approach
It would appear then that the study of reading can be approached from a linguistic or a psychological viewpoint. What is becoming increasingly apparent, however, is that the most fruitful work can only be done through combined approach which takes both linguistic and psychological factors into account. In many cases, however, psychology and linguistics tend to merge, thus forming a new entity. This is apparent in many psycholinguistic problems and studies, and it may be well to examine briefly, certain aspects of these studies which could offer useful perspectives for the study of reading.
Among the numerous language problems which have engaged the attention of psychologists, we might consider the following:
  I.   Language Development in childhood;
  II.   Bilingualism and second language learning;
  III.   The structure of language;
  IV.   The problem of meaning;
  V.   Individual differences in language behaviour.
Numerous studies of the language development of children, notably by Piaget (1995), Lewis (2008), McCarthy (2000) and Brodbeck et al.(2006)) among others, have shown that a child's background of experience in the proper techniques of acquiring language, or his experience of the essential stimulus of his linguistic potentials — through play, oral communication, and exercises in thinking and concept development will affect, not only his command of the language, but his ability to develop and utilize ideas from that language. Many studies of this kind, tend also to confirm the effects of environment, or of socio-economic factors, in the acquisition of language skills. For example, children from middle-class homes tend to have better vocabularies, articulate more accurately, speak more correctly and grammatically, and construct more elaborate sentences, than children from working-class homes. Since language skills acquired in one's mother-tongue do in many respects facilitate learning or acquisition of similar skills in other languages, it is important for the child, particularly at the pre-school age and throughout his primary school career, to have linguistic experiences of the right kind.

This ties up with the second problem, the problem of bilingualism and second language learning. Bilingualism may be defined as the capacity to speak or communicate in two different languages. Since the language skills acquired from learning the first language may facilitate the learning of similar skills in the second or other languages, it is nevertheless true that the linguistic habits and techniques acquired in one language do sometimes interfere with communication skills in the second language. Carroll (1980:69) maintains that after the age of early childhood, it appears to be much more difficult for an individual to learn a second language system coordinated to a well-learned first language. He opines that in this type of bilingualism, called compound bilingualism, second-language responses are grafted on to the first language responses, and both are made to a common set of meaningful responses. According to him, the compound bilingual is less fluent in the second language, and the kinds of expressions he uses in the second language bear tell-tale traces of the structure of the first language.
This further raises the question of the most efficient technique of second language teaching which will ensure the acquisition of effective skills in reading and writing. The anthropologist, Hall (2007), throws some light on this question by making distinctions between different techniques of learning a second language in a classroom situation; second-language learning tends to be what he calls "formal" learning — learning guided by conscious, deliberate effort on the part of the learner; and there is also considerable infusion of "technical" learning — learning that is guided by the application of rules and logic. According to him, very little of the kind of "informal" learning, takes place "out of the learner's awareness," and which occurs in much early first- language learning, takes place in second-language learning.

A third factor to be discussed is the structure of language. Reference has already been made to Lefevre's advocacy of the mastery of meaning- bearing structural patterns of spoken and written English as an aid to reading efficiency. There can be no doubt that a poor understanding of the structural essentials of

English language does lead to poor organization and comprehension in reading task. Among such structural essentials of English, which frequently beset students with difficulties, as discussed by Whitehall (1986) are: (a) the mastery of the word groups and phonemes of the language; (b) sentence structure; (c) frequent modifications and shifts of emphasis; (d) the connectives or conjugational devices linking subject-predicate word-groups (e) verbs and their helpers; (f) the system of punctuation; (g) spelling and pronunciation; and (h) techniques of word-formation.

The problem of meaning is the fourth aspect of psycholinguistic studies which could throw light on the problems of reading. This problem of meaning is one that has engaged the attention of many philosophers, linguists and psychologists. For instance, philosophers such as Bergson, Whitehead, Bertrand Russell and Wittgenstein, finding the problem of meaning rather baffling, have tended to take the view that language is inadequate for its purpose, that it is incapable of conveying thoughts, or of interpreting materials accurately, precisely, and without some ambiguity of meaning. Urban(2012), sums up the whole skepticism regarding the value of language, in his *Language and Reality*, by concluding that the history of European culture is the story of two great, opposing evaluations of the "word". In England for example, whereas Hobbes, Locke, Bentham, James Mill, and Horne Took spoke for low evaluation of language, the Cambridge Platonists -- Coleridge and Matthew Arnold — are representatives of the high evaluation

The problem of meaning, particularly in philosophy and psychology, is generally approached by considering the relationships that are said to exist between signs and the things to which they refer, or better still, between signs, their referents, and the users of signs. The real trouble is that words may convey different meanings in different contexts; they may convey ideas and thoughts inadequately or vaguely, and all this could lead to wrong interpretations or misunderstandings. Thus, the problems of the reader are magnified by the unresolved problem of meaning in language.

This complication is accounted for by the following factors. First, a word may have a denotative meaning, a connotative meaning, or situational meaning. The denotative meaning of a word is the dictionary meaning, or its socially approved usage. Connotative meaning is fundamentally an individual matter because it depends on the experiences that the individual may have had. There may be similarities among the connotative meanings of words, owing to similar experiences in a speech community, but to the extent that people's attitudes and experiences differ, connotative meanings can also differ. Again, a word or sentence may have a meaning that can be inferred from the particular situation, in short, a situational meaning. Carroll (1980) puts his finger on this point when he says that a sentence can be likened to a computer program; in fact, that is precisely what it is; a set of directions of the human thinking machine. The hearer or reader of a sentence constructs its meaning by following the directions it provides in terms of the concepts and conceptual relationships it evokes; also utilizing whatever further information he may have concerning the situation. This is really the process of interpretation, which is part of reading itself.

The second factor that complicates the problem occasionally is that the speaker's or writer's intention in creating a sentence is not necessarily correlated with the situational meaning that sentence has for the hearer or reader. The speaker or writer may not be completely successful in creating a sentence that will be interpreted exactly as he intends it to be, or he may even be too successful in creating a sentence that he knows will be interpreted in a way that will deceive the hearer or reader. Perhaps this is why many legal documents are later shown, by other legal experts, to contain some loop-holes that can set the criminal free!

Finally, we might consider briefly the problems of individual differences in language behaviour, and their bearings on reading efficiency. Carroll (1980) has listed nine kinds of dimensions of ability in the domain of language behaviour, which have been identified from a combination of various studies. These are: (1) verbal knowledge; (2) abstract reasoning ability; (3) ideational fluency; (4) word fluency; (5) fluency of expression; (6) grammatical sensitivity, (7) naming facility; (8) oral speech ability, and (9) articulation ability.

The verbal knowledge factor refers to one's knowledge of the vocabulary and the structure of the English language. This dimension of language ability is usually measured by the following types of tests: vocabulary tests; tests of knowledge of "correct" (i.e. socially approved) English grammar and usage; spelling tests involving more difficult vocabulary; and certain tests of sentence completion. As Carroll points out:"Verbal knowledge is correlated with the extent, variety, and richness of an individual's concept, at least to the extent that these concepts are symbolized by words."

Abstract reasoning abilities refer to human capacities to perform reasoning tasks. Factorial analyses of reasoning abilities, though they have yielded ambiguous and controversial results, have nevertheless revealed that people differ greatly in their ability to perform reasoning tasks, whether concrete or abstract. For abstract reasoning, which is essential in efficient reading, the formation of concepts is very necessary and an individual is handicapped to the extent that his facility in the language of communication has not reached a point that would enable him readily to form or comprehend the necessary concepts.

The factor of ideational fluency represents an individual's capacity call up as many ideas as possible about a given topic or theme. An easy test of this would be to ask the testee to write down as fast as possible, the words for (say as many "wooden" or "round" things as he can think of in a short while. A testee whose ideational fluency is low, or who is not reasonably familiar with the words associated with these objects, is likely to perform badly in the test.

A factor which is similar to ideational fluency is word fluency. It refers to the ability to think of words with certain formal characteristics – such as, words beginning with (say) the letter a, b, c, or d, when spelt. Individual differences in this case appear to be accounted for by the phoneme correspondences or by the "phonemic coding ability" of the individual. It is not improbable that a marked degree of absence of this ability could retard speed of comprehension in reading, and possibly have an adverse effect on one's capacity to reason. The factor of fluency of expression refers to an individual's capacity to formulate ideas and to put them in grammatically acceptable constructions. This also can be tested in several ways. For example, the testee might be asked to think up a large number of expressions for praising the virtue of a candidate for a political election, for appointment as head boy of a class, and so on. It could be shown that testees who display fluency of expression in such a test usually achieve a good speed of reading comprehension.

Grammatical sensitivity refers to an individual's ability to recognise the functions of form-classes and constructions and to perform tasks requiring the ability to perceive these functions. An individual whose grammatical sensitivity is low would have difficulty in recognizing grammatical cues and linguistic sign-posts in his reading, and this would certainly affect his reading and comprehension.
The factor, 'naming facility,' refers to the capacity to respond rapidly with the names of things, shapes, colours, and other objects, when such items are presented physically, or by means of a filmstrip or photograph, in rapid succession. This also can be tested, and a testee who performs very well in such a test should be quite capable of reading with reasonable speed and comprehension.

Oral speech ability refers to the capacity to speak effectively and coherently, in a more or less formal speaking situation. A good testing procedure would be to organise an open debate, public discussions and lectures and other situations requiring speech making. Although it is quite possible for a poor speaker to read efficiently, it is unusual for one who has demonstrated oral speech ability of this kind to be deficient in speed of comprehension.

Finally, we may consider the factor known as articulation ability. This refers to the speed with which speed sounds or utterances can be, or are, articulated. As Carroll (2010) says:"Phonemes are the building blocks out of which meaningful or grammatically functional forms are composed; furthermore, the critical basis for differentiating among these forms." Clearly, these dimensions of language ability overlap considerably. And the nine dimensions considered hardly provide us with an exhaustive list of

factors which are associated with individual differences in language behaviour. But there can be little doubt that each of them has some important part to play in the individual reading ability.

Conclusion
The ultimate value of a psycholinguistic approach to the study of reading lies in the fact that it creates in the minds of teachers and students of reading an awareness of the fact that the problem of reading is partly linguistic and partly psychological. This kind of awareness should then enable all who are involved with this study to take appropriate steps to deal with the knotty problem.

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