AUTOMATIC AND CREATIVE SKILLS IN READING

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In this article I will discuss the automatic and creative skills in reading, focusing on the differences between 1) processes involved while learning how to read and processes employed by the proficient reader and 2) knowledge for using language and metalinguistic awareness. The arguments will derive mainly from the definition of reading as a process where the receivers combine the information extracted from the written material with their specialized knowledge activated during this process (i.e. linguistic systems and correspondent rules and enciclopedic knowledge) in order to comprehend, interpret and internalize structured new information and/or to experience aesthetic pleasure. Evidence to illustrate the arguments comes from experiments (1) with pre-school children and beginning readers on narrativity and on the dichotic paradigm, and with illiterate and literate adults with diferent levels of proficiency of reading in a task of erasing an initial syllable and an initial consonant.

I will not consider other automatic processes like reflexes and/or motor tasks (Fowler and Turvey, 1978) where symbolic systems are not involved, that is, skills the responses to which are immediate: the automatic processes here considered will be those mediated through signs, namely, linguistic signs.

1. Processes involved while learning how to read and processes employed by the proficient reader.

The great achievement by a beginning reader is the discovery that written signs can also convey meaning. In a literate society where a large part of the information is transmitted by means of the written medium, children usually develops

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spontaneously the heuristic strategy of "reading" aloud the logotypes of brands which interest them, like "coca-cola", for instance. This strategy is comparable with that employed by the 20 month old child when acquiring oral language and continually asking the adult: "(What's) that?" (in Portuguese ['esi,]).

This strategy is extremely important, since the child is discovering the functionality of written signs, that is, to convey meaning (Ferreiro and Teberosky, 1979). It is also isomorphic with the strategies developed by the infant while discovering language (Ferguson, 1978; Stoel-Gammon and Dunn, 1985; Nitrouer and Scuddert-Kennedy, 1987, Nitrouer, Sutddert-Kennedy and McGowan, 1988), considering the word globally with its prosodic features and only when the vocabulary increases and children's perceptual motor skills are more controlled (Albano, 1978:136-7) they begin gradually, first to recognize unconsciously and inferentially syllables and finally the segments composed by phonetic features (second and third articulations).

It does not mean, however, that the child has already consciously controlled the ability of segmenting the consonant from the vowel with which it coarticulates, to allow the phonologic-graphemic rules to apply, which is the more difficult and obligatory step in order to decode written material employing alphabetic systems (for a discussion, see Bertelson, 1987:4, referring to the work of Masonheimer), as decoding the alphabetic system implies recognition of the distinctive features of letters independent of stylistic letter variations and/or the word being seen for the first time.

As Cossu et al. point out (1987:91): "poor beginning readers and illiterate adults both tend to find the phonemic structure of spoken words quite opaque".

A large space has been devoted to research and discussion dealing with the role of decoding in reading. From the point of view of applied sciences, the main reason is the amount of failure found among children who are unable to obtain the levels considered satisfactory in reading (Scliar-Cabral and Grimm-Cabral, 1987) (1). Although some reasons may be different in developed

and undeveloped countries, it seems that there is agreement on one point: **learning to read in alphabetic systems is difficult.** One main reason for this difficulty is intrinsic in character, namely, that the speech signal is a **continuum** (2): neither the segments of which the phonemes are the abstract and classified correlates nor even the words are separated in a discrete way; dependencies on the acoustic cues of the consonants to the preceeding and/or following vowel are obligatory (Liberman et al., 1954) and closed final syllables of words are reanalysed in different ones when the following word begins with a vowel (3).

In the alphabetic systems, graphemes, represented by one or more letters, correspond many times to the phonemes and/or their allophonic values, since 1) the criteria to establish the systems were not entirely phonologic: they coexisted with the etymological ones, with etymons belonging to different linguistic families (Content, 1985:22); 2) the written systems are more resistant to linguistic change and more unified if compared with the sociolinguistically diversified oral language, phonological-graphemic rules do not always apply: this is one of the reasons to sustain the dual-route theory of written word recognition . The words are also separated by blanks. This transparency of the written system constitutes at a first glance, paradoxically, an aid and a difficulty: from one point of view, the syntactic unit called word becomes evident, without the necessity of parsing; from the other point of view, children facing the task of decyphering the values of the letters have to learn how to decompose the chain of speech in its phonetic segments: they have to destroy their intuitive perception of that chain (Alegria, 1982:9) as composed of the rythmic distribution of strong and weak syllables, considered as units.

There is strong evidence from empirical data proving that conscious segmentation of the syllable, or more precisely, separation of the consonant from the vowel with which it coarticlates is impossible to illiterate adults (Morais et al., 1979, 1987 [1986], 1988; Scliar-Cabral, Morais and Nepomuceno, 1989 : experiments where the subject has to erase or add an initial consonant and an initial vowel (the last one coinciding with a syllable)).

I. Liberman (1971) was one of the pioneers proving the relationship between alphabetic systems and phonemic segmentation (Read et al., 1987 [1986]): the discussion resulted in the relationship between phonologic awareness and reading, the so-called cause effect discussion.

Although we can discern three main tendencies in this discussion: the first which asserts that phonologic awareness is a pre-requisite for reading (see for comments, Content, 1985:10); the second which asserts that phonological awareness develops with reading and the third which maintains the reciprocal and cumulative influence (Bertelson, 1987 [1986]; Morais, 1988), the three groups are not always attributing the same meaning to their labels. For instance: a difference must be made between phonological knowledge for using language and phonological awareness (in the latter case, there are different degrees of it, Mann (1987, [1986]:68-69): the authors attribute different meanings to the concept of phonologic awareness.

One clear conclusion derived from the above experiments with illiterate, semiliterate and literate adults initiated by Morais is that the ability to separate the consonant from the vowel with which it coarticulates is neither dependent on maturation nor develops spontaneously: the phonological knowledge people have, independently of literacy, is the unconscious and automatic one, necessary to process the acoustic cues, extracting the phonetic features in order to identify the phonemes for the recognition of lexical items (reception) and to activate the articulatory programme adequately aplying the phonotactic rules in such a way that minimal pairs are not being confused (production).

In addition, cross cultural studies (Read et al., 1987 [1986] with Chinese; Mann,1987 [1986] with Japanese and Cossu et al., 1987 with Italian) have also proved the influence of the particular written system: if it is alphabetic, it develops the ability of segmenting the syllable, which is not found with syllabic and/or morphemic and/or logographic systems. The possibility of some influence of the phonotactic rules of the oral system on those abilities was speculated by Cossu et al. (1987), to explain some differences found between American and Italian children using the same experimental instruments, since

open syllables are more frequent in Italian than in English, but it would be contradictory with data collected from Japanese children who have learnt to read in the Kanji system and were unable to segment (Mann, op.cit.), although Japanese is known as an open syllable language.

Threfore, phonological knowledge for use includes the ability for recognizing similarities and differences among sounds (Cossu et al. 1987), mainly the ones belonging to the stressed rhyme of a word which is largely used by young children (Weir, 1962) and illiterate poets in their lyrics (Bertelson and De Gelder (1988,in press), Morais, 1988). This consideration is important not only for theoretical purposes but also for educational ones, since many authors relate progress in reading with the ability in rhyming (Bradley and Bryant, 1983, 1985).

Firstly, it must also be pointed out that decoding (we will refer only to alphabetic systems here), that is, the ability of identifying the distinctive features of the letters in their interplay with an imaginary or real line and the values graphemes assume to represent phonemes and morphemes of a particular language to allow recognition of written words does not mean that the subject reads (see definition in the beginning of this article and also Alegria, 1982:8), although it is a necessary step to achieve reading (see, for instance, the comments by Frith & Snowling, 1983 on children called hyperlexics who, although are very fast and proficient in decoding,show low levels of comprehension; observe also how very fast typists can type without mistakes although they do not understand what they have typewritten). Consequently, testing Ss to find out whether they recognize lists of words assesses only proficiency in decoding, although it has shown great power of predictability for success or failure in reading (Content, 1985:32-3) (see, for instance, the experiment of Cossu et al., 1987:96 and also Mann's study where one of the measures employed was the Hiragana reading ability test: since the other measure was children being rated by their teachers in Kana reading ability and if the situation is the same as in Brazil, where first grade teachers confuse decoding with reading, the criticism applies also to the second mentioned study). Since reading is a very complex process and

even if researchers have tried to isolate the variables, testing children with words and non words, it seems that more than one of these variables are responsible for success and failure in reading, namely, decoding and knowledge about the topic being read, manifested in its corresponding semantic fields and mental dictionary. Secondly, children who are proficient in rhyming usually are those exposed to contexts where the use of language is valued in its different functions: they probably have heard the first rhymes inserted in stories, with narrative flow, read by their parents when they were in the crib, before sleeping; these habits undoubtedly have developed positive expectancies toward the written medium besides other important cognitive abilities related with reading, such as, narrative schemata, since it can be said that in the same way as segmenting the chain of speech is the most difficult task for decoding, facing the written page, without the presence of the writer, that is, the spatio-temporal rupture between writer and reader is the most difficult task for comprehension and interpretation (a detailed report about the relationship between narrativity and reading among pre-school children can be found in Scliar-Cabral (1983a,b; 1985 and Scliar-Cabral and Grimm-Cabral, 1984a, b). Content (1985:21) has pointed out that "l'écrit laisse une trace et s'adresse à des locuteurs absents".

Thirdly, activities which syntonize with the psychological maturity of children and their motives have the probability of improving their cognitive abilities and those skills necessary of reading. For instance, it is known that all activities which involve playing and imagination, and their natural heuristic tendency are welcome for children: these include rhyming, telling stories, playing with sounds and discovering new ways of exploring the universe.

In Brazil (and in Latin America), there is a great discussion among scientists about methods and manuals for teaching reading (unfortunately this vast bibliography is written in Portuguese and it is not available to the international scientific public). This discussion is due to the enormous number of failures and drop-outs during the first grades of the primary school (see note 1): even in São Paulo, the most important city in Brazil, 50% of

pupils enrolled in the first grade fail somehow. The situation is similar to other Latin American countries and educationalists are conscious that without solving this crucial problem, those countries will continue in the same state of poverty and dependency. Among these scientists two names must be cited owing to their important contribution: P. Freire (1982) and E. Ferreiro. Both, though belonging to different theoretical backgrounds, have emphasized that failure in learning to read is mainly due to the lack of functionality of the discourse in the class-room, including the manuals. E. Ferreiro has pointed out that a child who belongs to an environment where nobody reads, where there are not newspapers, where the mother does not know how to write a shopping list is not interested in reading, mainly if the written material at school is totally nonfunctional.

Although there is clear evidence for the interrelation between phonological awareness and learning to decode written material, we must be cautious in deriving from these results applied norms in favour of this or that method (for instance "phonics" against "global" ones). There is also large evidence that the mechanic application of the phonic method results in total failure if:

1) recognition of sounds and their segmentation are taught as an end in itself and not as a means to automatize decoding in order to reach reading;

2) the sounds which are being trained are nonfunctional, that is, do not belong to words, and so, are not the realization of the phonemes of the children's language (since phonemes have the function of distinguishing meaning);

3) the activity is decontextualized and words are chosen with the only purpose of making the child repeat tiresomely the same sound which is being taught, resulting in a disconnected collection of sentences without cohesion and coherence;

4) the activities do not accompany the cognitive and affective interests of the child who feels pleasure in discovering the world and in playing;

5) teachers are not prepared to observe sociolinguistic differences which entail that the phonologic and morphophonemic graphemic rules are not the same for all children.

My own experience, having given a large number of training courses for people involved in literacy and after analysing more than 50 manuals with their respective guides for teachers, is that children become bored if they are obliged to memorize the routines, the purpose of which they cannot reach (due to the above mentioned reasons).

See, for instance, a prototypic example of a "text":

"Mamãe ama Mimi.	'Mother loves Mimi.'*
Mimi mama na mamãe.	'Mimi suckles mother'.
Mimi come mumu."	'Mimi eats mumu'**.

(*Mimi: usually a cat's name; **mumu: the name of a brand of milk desert. In addition, see the perceptual and articulatory difficulties the repetition of the same signal will produce in the unhappy child who neverthless has to learn how to read!).

In conclusion, the acquisition of the decoding rules in alphabetic systems is not unconscious as it is the case of the phonologic ones: it demands from the child a reflexive attitude toward the chain of speech in order to dismember the syllable in its discrete units, to relate each of them to their corresponding graphemes; the same is true in relation to some morphemes and their derivational families, the ortography of which cannot be predicted by phonologic-graphemic rules.

The more these rules become internalized, the more they become automatized: the proficient readers have no need to reflect upon the values of letters: more space of their attention is liberated (Kahneman, 1973) being available to the central activities of reading (comprehension, interpretation and retention of new structured information and/or aesthetic pleasure). In the case of morphemes and their derivational families reflection is still needed in the case of some ambiguous homonyms and reflexive routines are certainly employed by the writers when monitoring the ortography of what they have written.

2. Phonetic and phonological knowledge for using language and phonologic awareness.

There is a great difference between phonetic and phonologic knowledge for using language and phonologic awareness. The first one every normal being has in relation to his particular

sociolinguistic variety and it is internalized spontaneously during language acquisition, while phonologic awareness may achieve different degrees of proficiency and its complexity is dependent on the development of written languages and on the development of decentration (Piaget, 1970a, b) between the epistemic subject and the object of knowledge, in this particular case, language. This distinction is similar to the one made by Cazden (1976) between implicit and explicit awareness but we prefer the label knowledge for the first case, since one of its characteristics is exactly not to be conscious.

By phonetic and phonologic knowledge for using language, I mean the abilities listed below following and increased order of complexity developmentally:

1) intonational patterns: the "word" overlaps with the utterance and weak and strong syllables are rhythmically distributed corresponding to holistic articulatory gestures (Waterson, 1971; Fowler, 1986:140; Menyuk and Menn, 1976);

2) gradual emergence of the phonemes with their phonetic features which differentiate among them; respective distribution rules, including allophonic rules phonetically determined by context;

3) gradual emergence of the morphophonemic rules which signal the boundary of morphemes, their distribution and allomorphic rules.

There is evidence from diachronic changes, from data analysed by Fromkin (1980) dealing with slips of the tongue and from dichotic experiments with illiterate adults (Morais et al., 1987) and pre-literate and literate children (Scliar-Cabral, 1988)) demonstrating the automatic processing of phonemes and phonetic features, their distribution (phonotactic rules) and allophones contextually conditioned.

A particular type of answer (blending) given by Ss in the dichotic experiment will ilustrate this. The Brazilian experiment was applied on 29 seven year olds belonging to two different SE levels (10 literate children belonging to the MHSE level, m.a. 7.3 and 8 to the LSE level, m.a. 7.4, tested at the end of the 1st grade and 11 pre-literate children belonging to

the LSE level, m.a. 7.3, tested at the beginning of the 1st grade).

The experiment consisted of 8 groups of 6 minimal pairs each ('CVCV), the difference being always in the 1st segment, a stop. Blendings were possible whenever there was a difference of two features between the words, for instance, given the stimuli /'patu/ and /'gatu/, the answer could be /'batu/ or /'katu/. For the total 928 possible blendings, 202 were given and no significant difference in the number of responses was shown among the groups, although the literates gave more consistent responses preferring the feature [+voiced]. These data confirm Morais' conclusions about the phonetic feature automatic processing independently of literacy.

On the other hand, only literate people have the ability of segmenting the consonant from the vowel with which it coarticulates (Morais et al., 1979, being the first to prove it experimentally with illiterate adults, in Portugal, evidence being confirmed in a similar recent experiment run in Brazil by Nepomuceno: Scliar-Cabral, Morais and Nepomuceno, 1989). The difficulty of this task, which demands a great level of phonologic awareness and selective attention is mainly due to the dependency of the consonant speech cues on the vowel with which it coarticulates (Nitrouer, Studdert-Kennedy and McGowan (1988:3).

Morphophonemic rules were proved to be applied automatically by children in a pioneer experiment run by Berko (now Berko-Gleason (1971 [1958]). In this ingenious paradigm, given a non word in the singular or in the infinitive, for instance, conforming to the phonological system of a particular language, Ss are asked to elicit the plural or other verbal forms, showing that they unconsciously and productively know the above mentioned rules.

This experiment was adapted to Portuguese (Scliar-Cabral and Lockett, 1975) and the results were similar to those found by Berko (now Berko-Gleason), although Ss belonging to different sociolinguistic environment showed different morphphonemic rules.

The discussion about metalinguistic awareness continues (phonological awareness being one of its parts), although there

is general consensus about its importance for learning to read. Pratt and Grieve (1984:2) mention that:

> "It is difficult to be more specific when defining the term, however, because the nature, functions and typical age of onset of metalinguistic awareness are still subject to much debate. An elementary reason for this debate is that psychology, in common with other disciplines, has not yet been able to provide a well articulated account of concepts such as awareness and consciousness which are involved in the study of metalinguistic awareness."

In this article, I define **phonologic awareness** (which is an awareness about linguistic objects automatically processed) as the ability to reflect upon phonologic objects, reflection which shows different levels, depending on the increasing complexity of these objects and also on the gradual decentration of the epistemic subject toward this object (the scientific knowledge being the uppermost level).

Different levels of phonological awareness may be exemplified by the beginner learner of reading in alphabetic systems and the first phonologists (the phonological awareness of phonologists is the upper degree of this kind of awareness: even specialists belonging to different fields of research still confuse phonemes with sounds).

The beginner learner has to internalize the rules of phonologic-graphemic correspondences, so, s/he must acquire the knowledge that the syllable is divisible in other units; since the ortography of a great number of stems and their derivational families can be only predicted by the morphophonemic rules, s/he must be conscious about these rules in order to be able to recognize words which are seen for the first time in the graphic space as was mentioned in the first part of this article. Therefore, s/he will be obliged to reflect about the sequences s/he is used to hearing and to producing in the form of a continuum of global gesture cutting it down in its units in order to relate them to their corresponding graphemes (this reflection as soon as the rules of correspondence become internalized gives rise to the automatic processes developed by

the proficient reader).

We cannot affirm that the written systems allow the learner to have a complete phonologic awareness owing to the following factors:

1) when the alphabetic systems were fixed (with the exception of some recent agraphic cultures who received their alphabets recently), phonology did not exist as a science, so the principle of biunivocity did not apply: phonetic criteria were mixed with the phonologic ones;

2) stems belonging to different linguistic families were continuously entering the lexicon (borrowings) the ortography of which having to be learnt only by heart (marked forms), without phonologic or morphophonemic graphemic rules being productively applied in their recognition;

3) written alphabetic systems are much more resistant to changes if compared with the oral ones, the latter showing also a greater sociolinguistic diversity: these differences cause an increased gap between the two systems, greater between the oral system of low socioeconomic level and/or country sociolinguistic varieties and the written system adopted in the class-room.

An example of the uppermost degree of phonological awareness is given by the discovery of the notion of phoneme, very late, if we consider that only in 1870 the Polish scholar Beaudoin de Courtenay (1845-1929) applied to linguistic description the concept of phoneme as a class of sounds.

3. Final remarks

In this article I discussed the automatic and creative skills in reading, starting from a definition of reading, ilustrating my arguments with data collected from experiments run in Brazil with children, pre-literate and beginner readers and with illiterate and literate adults.

My efforts were conducted in order to bring to reflection that, although there is no consensus about what is linguistic awareness, empirical data from our and other studies show the reciprocal and cumulative influence between reading and the

specific awareness here discussed, namely, phonologic awareness.

I have argued that there is a great difference between tacit phonologic and morphophonemic knowledge for using rules productively in oral communication and phonologic awareness needed for the learning of the alphabetic code.

In addition, I stated that in order to develop this awareness, training material should be functional for children: as soon as they become proficient in the internalization of the phonologic-graphemic and morphophenimc rules, they are automatized and the proficient decoder is free for the more creative processing of the written material: comprehending, interpreting and saving new structured information and/or enjoying aesthetic pleasure.

NOTES

(1) According to Gusso (1983:35), during the period 1975-1980, if we follow the itinerary of a cohort in Brazil, we will observe that it lost three and a half million students (61.4%). This situation is even more dramatic if one takes into account that 90% of all students repeat at least once.

(2) Joos (1947) was the first linguist to discuss through the analysis of spectrograms of utterances the paradox of the continuum of the speech signal and the distinctive discrete units (the phonemes) which are abstract representations in the minds of the receivers/speakers of a language.

(3) The phenomenon of **sandhi** may be exemplified in Portuguese where the word /mar/ ("sea") a CVC monosyllable, in contact with /'awtu/ ("deep"),a 'VCCV disyllable is reanalysed as /'ma'rawtu/: 'CV'CVCCV.

(4) Titone (1986:6) has pointed out that "Comparative research demonstrates that there is no compelling evidence that any one method of reading instruction is superior to the others. After all, many teachers tend to be ecletic."

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