



ISSN 2543-506X

DOI: <http://dx.doi.org/10.12775/CSNME.2017.012>

Received: December 3, 2017 / Accepted: a) May 11, 2018; b) May 14, 2018

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The Barrage in reading and writing

Abstract. Training can be organized to spread fluidity according to an ecological pattern of training. This could help to spread the cognitive exercise, orient the visualization in self-learning so that the operative directionality of the reading-writing can allow the activation of strategies, the automatization of the directionality that involves discomfort in the performance, to relaunch the cognitive, organizational potentialities and planning.

Keywords: Barrage, lateralization, visualization and sequencing.

Introduction

Dyslexia is an effect of dysfunction of different circuits of the brain, not areas, but of networks and therefore of the dynamic cerebral integration between the various areas of the brain that it is in some way in difficulty. This proceeding that is in difficulty both in time and in space leads us to the explanation, already expressed by Crispiani (Crispiani, 2016), more inclusive of the phenomenon that it interprets dyslexia as dyspraxic disorder.

The discomfort that involving dynamic integration entails all the areas, namely the areas implaies are both the left and right areas: the brain is activated simultaneously, with bilateral mode because as we will see later the two hemispheres are needed to analyze and synthesize dynamically the characteristics of the word or letters in sequence, such as occurs in lexical segmentation (Crispiani, Capparucci, 2009). This explains it to by

Chiarenza (Chiarenza, 2008) through the electric potentials of the brain, according to a neuro psychophysiological reading of the mind.

The main symptoms of a dyslexic subject are configured in the slowness of reading and writing, both in letters and in numbers, that is, his lack of fluency which is concretized in the difficult readings and the partialized writings.

Poor fluency is something that belongs to the movement. This is the reason why studying movement is fundamental, taking into account the fact that we must study it starting from a paradigm that it is not based on the classic stimulus-response paradigm, but on an ecological interpretation: observing that a child does not read or write does not tell us anything about how and why what is happening appears in behavior.

Instead it seems to be more interesting to observe everything that happens in the child in the interval, which passes between the request and the performance, then all the processes of elaboration of the stimulus, such as the incipit and stopping, which should take place in auto mode; also in this case our understanding is partial because we are not informing about what happens before the subject performs the action and what happens after the subject concludes the action.

In any case, the action always involves a bimanual doing, which requires a certain motor coordination, timing and learning, as well as the exercise of an action aimed at a precise interval of time.

When this comes true and it becomes firmly repeatable then it is the subject who can initiate an action to achieve a certain goal. The goal is the result of the task that is given to the subject online at the end of his action and here the subject knows the result of his performance.

Since both reading and writing are made of infinite combinatorics, the subject is asked to replicate and improve the action, therefore to write and rewrite as many times as possible in plural cultural contexts. Depending on the result and in relation on the text the subject has to readjust the strategy, that is why it is called adaptation to the program. Each of us must own a cognitive and motor program. Each subject must reprogram his program and put it back into action when he is facing a task that is goal directed namely that it has a directly interactive objective in this case with the sheet.

So we can say that in order to write we must be able to read and this requires a certain timing, where there is a motor sequence of reading and

writing, it requires an improvement in performance, recognition of errors and so on. Timing affects on the oriented movement of reading and writing because they use not only the incipit and stopping, but also of the energy capital of the preparation, necessary for the subject to organize the movement and this phase represents the organization that feeds on the pre-warning or alert.

Visualization as a process

To read and to write our eyes are oriented by our functional integration of the brain to move on the sheet from left to right, and then thanks to the lateralization to change direction, making a concatenated sequence of crossings.

To perform an action of this kind, each of us must represent the motor action itself, select the necessary elements to be accurate and put together the ideokinetic elements of the movement itself and in particular the strength that I put there, the direction and speed, which in turn are very important parameters with which the subject knows what movement he can perform.

The action in the brain does not end as in the behavior visible to us, but the brain continues to process this information, just because the subject takes and knows the result of his actions, stores, evaluates and prepares at the same time to update the his motor program.

In addition to the incipit and stopping there are the most important moments that are the pre-alert phase, the preparation to use energies stimulated by the incipit and the other of the feedback stimulated by the self-visualization of the error the task.

Dyslexics lack the awareness or the ability to understand when to start, continue and finish the task and also they do not catch the place and the sense of error so they continue to make mistakes, increasing the executive dysfunctionality. They can not learn from the experience that they continue to perform actions in a dysfunctional mode, read and write neglecting all previous results, as well as all dyslexic subjects who make mistakes go on without realizing the mistake and they continue to wrong: but they know that they are missing the task and this makes them humanly fragile.

Based on these reflections, Crispiani and I created the Barrages (Crispiani, Pellegrini, 2006), which belong to the French tradition and which have been revisited by us according to the cognitive and ecological principles of the Co.Cli.T.E. System. (Crispiani, 2016).

Starting from the slowness of dyslexics that overflow halfway through the task, completely losing the directionality and orientation of the performance, we realized how much lateralization is an inevitable factor in relation to the disturbance of movement programming, involving the latency of integration visual and kinesthetic processes, as well as the reduced ability to evaluate the own performance and to correct the own left-right movement reiterated in the task. This series of awareness tells us that the subject is struggling to execute consecutive motor programs and with crossed patterns, once again configuring how dyslexia presents itself as a complex of processes that are altered in time and space.

Chiarenza offers an interpretation of why processes succeed each other in space and time. The scientist through his studies shows us that there is a difference in morphology between the various brain areas and for which there is not only a difference in temporal latency, but there is also a dynamic spatial difficulty. So we can think of dyslexia as a dyspraxic disorder as well as a disorder of programming and sequential integration of space and time.

Scientists in the world talked about the cerebellum, especially from Nicolson and Fawcett (Nicolson, Fawcett, 2007), as a tool for sequencing and furthermore this reduced capacity of the processes that require the evaluation of their own performances. It is not by chance that dyslexic subjects have difficulty when they need to learn fast, fluent tasks or learn new tasks involving the association of two actions. Each task that is summarized by two motor actions requires a bimanual coordination, the integration of two movements and therefore the dyslexic and dyspraxic subjects have a limited ability to automate motor performance, so they have a difficulty in the procedures of each movement.

Said this is not just the eyes to read and write. It is not the eye that reads and is not the hand that writes or counts. It is the mind that allows us to perform cognitive actions such as reading, writing and counting, since it is the mind that makes coordinating processes work. Thus, reading-writing is a *supportive process* of motricity, perception and movement, along physiological dynamics and functional integration that normally

regulate superior human functions. Dyslexia is therefore always an integrated condition, inclusive of dyslexia, dysgraphia and disorders of mathematical abilities, with extension to the complex praxis in the sense of qualitative disorder; it is a partially pervasive disorder, it is revealed as sequential dyspraxia with central involvement of the function of succession. This implies the primary left-right functional organization or the lateralization and the dynamic coordination of thought, which at the same time allow to make seriations, classifications and glances, selecting and processing all the information required for the production of appropriate behaviors, that is the praxies.

Eyes and mind

Cortical processes involve the preparation of ocular movements, that is of the motor program useful for the execution of the eyes, but in general of the coordination exactly to generate the most complex activity of scanning strategies (Kapoula, 2007) of the mind in dyslexics.

Reading is activity of the mind that starts from the vision. It happens that the saccade jumps allow us to take a whole word and to center it in the fovea in succession and in dynamic progressiveness. This process is automatic and is implemented according to a model of intensive activity that takes place for an integrated and concatenated process of words or sequence of numbers. This occurs due to an apparently undetectable shift related to spatial attention and temporal timing. On the covert shift the eyes move according to their own time / space, implying the binocularity / bimanuality on the three dimensions such as vertical, horizontal and not last the oblique, which involves depth because it entails the combination of two dimensions. There is no difference between the reading and the exploration of three-dimensional space because in any case it called into action the complex system of mind-vision-environment, that connotes the praxis and its sequentialization.

Kapoula interprets that the difficulties of dyslexics in fine binocular coordination can be thought of as a micro dyspraxia related to magnocellular and cerebellar dysfunction. The subject not to appear coarse or clumsy during the vision exploits the convergence. The ocular convergence serves to be accurate that is to calibrate well the angles with respect to the visual axis of the depth because the convergence cancels

the peripheral asymmetries and makes the movement smooth and accurate. In Dyslexics, the interaction of the saccade jumps (Kapoula, 2007) and the ocular convergence for which they attack words or detach them at the wrong time is weak, or they confuse the last letter of the word. Disconnection in dyslexics is never the same and can be both divergent and convergent.

The problem focuses on the quality of the coordination of the saccade jumps and their continuous functional integration that are practiced with reading and writing. Therefore, binocularity/bimanality, which is based on coordination, can only be implemented through specific training of dynamic coordination experiences. The Barrages (Crispiani, Pellegrini, 2006) represent a modality of specific treatment, together with the other ecological-dynamic actions aimed at implementing the all functions.

Reading and writing in fact involves the natural exercise of intrasaccadic jumps that feed on cooperation between saccade jumps and angles of convergences/divergences that must be continuous and sequential, need to interact continuously (Kapoula, 2007). There are variables that must therefore be jointly involved and processed simultaneously: binocularity/bimanality, cooperation between saccade jumps and angles of convergence/divergence, latency of eye movements, accuracy and speed.

The dyslexic suffers the perceptive shift (Crispiani, 2016) in the space from left to right and/or in time and the subject is lost in the perceptual pursuit of visual or auditory stimuli, when the object moves and the observer is immobile, or the observer moves and the object is stationary.

These disorders occur because the actions require a sequential progression from left to right, the automatism or a series of automatisms and the fluidity of the action, the organization in space and time, the rhythms and the relationship of part-all or all-part, convergence – divergence.

When an action has already been learned and the subject realizes it with difficulty and in any case achieves it with unsatisfactory results, we are in place of a criticality: it is a condition of an existing function, already learned, but not made stable, or automated. Non-automation is evident because what seems obvious to us in relation to the specific aspects such as slowness, impetuosity, interruptions, hyphenation and errors: the dysfunctions and errors in reading and writing are not constant but at a discontinuous frequency.

When the lateralization is uncertain, the subject makes it difficult to perform sequencing, for which:

- does not exercise the global approach (process) to the word in every language;
- does not facilitate the fluid and rapid exercise from left to right and top-down control;
- not allows automatism, predictions, slows down and tired and the subject never exercises.

I Barrage. Towards sequential continuity

It starts from slowness and a large series of stumblings to train the mind to fluidity and correctness according to a continuous frequency. Therefore we activate through the Barrages procedural options the processes of the mind and sequential coordination. These action procedures are based on a cohesion of principles that make it a cognitivist strategy:

- the search for intentionality and automatism of pattern;
- intellectual and motivational participation;
- globality of actions and their significance;
- sequential continuity and fluidity of execution;
- increase in organized practices;
- increase in executive speed;
- activate-consolidate-stabilize the integration of the functions.

Barrages are a basic cognitive and motor activity. This exercise consists in ticking by underline the sequences of signs, words and numbers from left to right, for:

- to unhinge the reader-writer from the analytical approach, letter by letter, to the written language;
- remove the attitude to the fusion of letters and syllables;
- promote the taking into account of graphic patterns gradually longer from left to right;
- mental and motor integration
- intensiveness as constancy and just pressure in the execution
- promote the taking charge of the entire word or the entire sentence;
- promote processes from left to right;
- promote the progressive speed of execution;

- promote intuitive and predictive processes;
- promote understanding of the text during reading and writing.

The training can take place autonomously or under the guidance of the educator or therapist, following the following procedural indications:

1. show the task. Explain that the board is composed of horizontal lines arranged in a single column or in multiple columns. The task must be executed entirely. The exercises can not be reduced because they lose effectiveness;
2. give the delivery, or underline all the sequences proposed according to the direction indicated by the exercise itself;
3. warn the subject that:
 - the subject must move only in the left-right direction;
 - can not go back to correct;
 - regardless of correctness should not be stopped;
 - can not start where he wants.
4. do not interrupt or distract the subject;
5. promote the speed of execution. Each subject will present his own executive gait. the specialist will refer only to the parameters of the subject and not to a fixed parameter, since the subject is not exercised at absolute speed but is in favor of personal fluency.

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