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Body percussion and dyslexia. Theoretical and practical contribution through the BAPNE method

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Abstract

This research contains the motor aspects linked to dyslexia that may be helpful to patients with this disease. After clarifying the issues and causes of the dyslexia, different movement patterns are studied using the BAPNE method that reinforce the laterality on a unified way of the different phonological problems.

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1. Introduction

Dyslexia is one of the most common learning disorders affecting current students. (Mertoğlu, NurTuğluk, & Koçyiğit, 2009). It is characterized by a significant delay in reading and writing skills, creating this a certain difficulty to distinguish, analyze, integrate and memorise letters or groups of letters.

Earlier these kind of disorders were associated with other factors such as visual-perception deficit, although this hypothesis has been rejected as etiologic origin (Suárez & Cuetos, 2012), considering though this factor as an added dysfunction. Generally, there have been studies on phonological theory, magnocellular theory (visual – auditory), and theory of the cerebellum, without reaching any causality relationship between the latter two, (Ramus et al., 2003) becoming phonological theory along with the deficit in the processing of information on casual
explanation the highest causal explanation due to its neurological basis of genetic origin, and its direct relationship with the disorder.

Recently studies regarding this issue, also detect, an initial misdiagnosis (Timoneda, Pérez, Mayoral, & Serra, 2013), which affects the ineffectiveness of the procedures to perform, providing a negative result on the recovery process.

There are different types of dyslexia, and there are also many features that could result in dyslexic subtypes, although this article does not address them, as they are not the main goal of study.

However, the main features that individuals with this disorder present are:

- Difficulties and perceptual errors (visual–spatial concepts in perceptual-motor behaviours, in temporal concepts, in auditory perceptual errors, in perceptual-motor errors, in malfunctions in the auditory and visual memory).
- Difficulties and psychomotor errors (difficulties in the acquisition and development of the body scheme and spatial orientation in the acquisition and development of the laterality, when conducting basic motor behaviours, presenting constant ongoing inversions in the graph-motor schemes and lack of pace in movement).
- Difficulties and Reading errors (omissions, substitutions, rotations, inversions or translations, auditions or aggregates). The lack of pace when reading must be emphasized, also the lack of understanding and structuring the phrases on a text.

Difficulties when writing: writing with fragmentation errors in the layout.

Lack of focus and concentrations and other kind of insecurities that are also transmitted to the personality traits. (Romero-Naranjo, 2012).

2. Purpose


As stated previously, recent studies attribute the causes of this disorder to a “failure in the phonological processing of the information” (Timoneda, Pérez, Mayoral, & Serra, 2013), and in the explicit or implicit processes of the major reading components, so that one of the departments or modules integrated on this process, does not serve its purpose, or the connections that link this mental operation do not perform their job correctly. (Lozano, 1990)(Lozano & Lozano, 1999).

Within explicit processes, i.e., those who require a hesitation by the subject for further manipulation, lies the met phonological capacity (awareness of sounds), and the morphological and syntactical awareness, (processes applied to other linguistic aspects). The deficit in this area, prevents proper decoding of sounds or graphs, uniting them intentionally later on in order to achieve word recognition, enabling this a good method when learning and writing, and therefore, a subsequent language comprehension.

Within the implicit processes, i.e. those performed automatically and without any kind of hesitation, the phonological or verbal short-term memory, and the rapid access to long-term phonological representations must be highlighted. (Defior & Serrano, 2011).

Regarding to implicit phonological processes, the following steps are followed:

- Encoding of verbal information, which is performed by the short-term memory, having a key role the operative memory when maintaining this information. This kind of memory stores the present information and processes new information, through two memory mechanisms: the phonological and visual –spatial (which differentiates the origin of the dyslexic subtype), giving rise to a deficiency when a there is a fault in the process.
- The speed when accessing phonological representations in long-term memory, allowing to relate prior knowledge to new, retrieving and integrating them in the visual processes with the linguistics, in order to get to a designation. This process is one of the determinants in the dyslexia disorders, as well as phonological problems, because its speed when processing information (name of digits, and especially letters) is much lower than that of the children who do not have this disorder, for which this process is automatic. This, plus the deficit
in the explicit processes, difficult in any case, a proper processing of the information, causing dyslexic problems. (Defior & Serrano, 2011).

At the same time, and according to the criteria of the PASS theory, in order to explain this problem, the fact that every information process involves an input, followed by a central processing and its output is assumed. Reading would be the output of the information, as it is the result of the act of reading, considering the text as input. Therefore, the origin of the problem would lay in the core processes that manipulate the information, among which are the Planning, Attention, Simultaneous and Sequential.

- **Planning**: is responsible for deciding what to do, to determine the target, so that the strategy to reach this target is put into action, evaluating afterwards whether it is reach or not.
- **Warning**: is responsible for selectively attend to the present stimuli. Cognitive activity is assigned to a particular stimulus, selecting information and avoiding the distraction to the rest of stimuli, allowing then the entry of the relevant information.
- **Concurrent processing**: is the one responsible for giving information on the whole, the holistic part (schemes, learning the way of numbers and letters, main ideas and thesis…)
- **Sequential processing**: is the one responsible for giving meaning to the parties (memorization of letters and numbers, association of sounds with their correspondent spelling…)

Consequently, dyslexic children, present a problem in sequential processing, which is the one responsible for phonological encoding, which is handled by the temporal lobe, having a deficit on the capacity to mentally retain series of sounds and spellings, also causing problems in the comprehension of the text when taking into consideration that this process involves coherence and cohesion.

In this way, these subjects show “a decreased activity in the left hemisphere of the cortex tempoparietal and occipitotemporal when performing reading tasks”. (Timoneda, Pérez, Mayoral, & Serra, 2013)

Not only this, but also the present interaction between cognitive and emotional processing, so that in some cases, subjects with a blockade on a physiological level, a result of discomfort and suffering produced by reading situations can be found, and therefore their body encodes danger and ‘pain’ emitting signals throughout the body (by the temporal amygdala) that cause an automatic response (avoidance of the task, for example), dominating then the planning process, which is fully behind this dangerous situation. In these cases the psychological intervention would be necessary, since without removing this lock the cognitive work cannot be performed.

These differences are the ones which should affect the time to make a good diagnosis of the case, to design guidelines for action as appropriate as possible to the subject under study.

### 2.2. BAPNE method

Under the psychomotor work, coupled with a strong neuroscientific basis for the reinforcement and activation that occurs in all brain areas, along with the multiple intelligences work from Howard Gardner (actually implanted and developed in the strongest educational systems), the BAPNE method (Romero-Naranjo, 2011).

Body percussion is the art of hitting the body in order to produce various types of sounds for didactic, therapeutic, anthropological and social purposes. Both in the field of musical cultures and in the world of shows and performances, body percussion has had different roles, which can be classified into their different uses, meanings and purposes in each culture. The body is used for these different purposes as an acoustic, rhythmic, dynamic instrument with distinct timbre because it is linked to movement and dance. It is important to stress that in the present day, the media and social networking sites play an important role in their spread, due to their high level of visual and aesthetic content, (Romero-Naranjo, 2013).

This method is supported by a team of neurologists, physical therapists, psychologists, speech therapists, music therapists, professional dancers and musicians, and is positive because of the provided improvements in concentration, laterality, attention, muscle memory, body memory and kinetics, rhythmic memory, skills and motor control kinetics, dissociation psychomotor, multiple intelligences, teamwork, emotional reinforcement and
motivation, activation of all brain lobes, activation of all brain association areas... all these factors can help the recovery process of individuals with dyslexia, as it is a work that responds to the work of all deficiencies appointed throughout this section: bad defined laterality, lack of pace, poor knowledge of the body schema, psychomotor alterations, lack of attention and concentration, writing-visual or manual-visual difficulties, insecurity movements and emotional problems, and difficulty in spacial perception.

2.3. Practice exercises

The exercises integrate the work of laterality, articulated from the language, melody and rhythm, which, combined, provides an important reinforcement of linguistic aspects, and neurological and motor processes. Music and sequential movements, worked also from a kinetic-body, spacial and visual are strong structured elements and organizational in cognitive processes.

Exercises.
As an example, take two exercises in the book “Didáctica de la percusión corporal. Fundamentación teórico-práctica” and adapted to the specific disorder.


The complete song’s text in English is:

- With the A, A, dabedabedaba. I have a doll which is made of hay.
- With the E, E, debe debe de. I have a doll which is made of yeast.
- With the I, I, dibedibe di. I have a doll which is made in white.
- With the O, O, dobedobe do. I have a doll which is made of wood.
- With the U, U, dubedube du. I have a doll which is made after you.

Once learned this through a fully sequenced and individual teaching, some arrangements will be preceded:

First, performed in pairs, and then in concentric circles, which later on also run movements in one direction or another will be performed, following the specialist indications and using constant reinforcement of laterality and biomechanical planes.

Working on the verbal portion will combine all of the above mentioned omitting syllables, words, and then, verses. The exercise will be also articulated on a common phonemes conflicting text for those subjects.

The syllabeda (de, from the stanza with e, di for the stanza with i, etc.) could be eliminated. Then the syllable la, from the first stanza, then another syllable, according to the needs in each group detected by the specialist; until the point that some verses are completely omitted (with the a, with the e, etc).

Another practical example would be designed from learning from the “variable circular coordination”, which combines peer structures against odd rhythmic structures:

In pairs, series of 3 numbers would be done, alternated by the two individuals and interpreting each subject its corresponding according to the order, so that the same number is no repeated.

This exercise is also complemented with a psychomotor movement associated to each of the present numbers, so that a large number of brain areas are activated.

Once this is performed, the numbers are changed by letters, syllables and words, so that the verbal the specific verbal disorder is trained.

An increasing degree of difficulty can be added in the execution, associating each syllable with its corresponding number within the serie varies, so that each time the letter, syllable or word has a different order, resulting in investments and simultaneously memorization of sequences, which are so difficult for children with dyslexia.

Furthermore this can be increased by expanding the number of letters, syllables or words which can be 5, 7 etc.
Conclusions

Different research papers, highlight that these deficient or absent mental operations that integrate information processing and cause dyslexia, were never developed. However, the repetition of the proposed exercises along with specific education psychology, can activate and stimulate in some cases these mental process, so that, Little by Little, reaction times and retrieval of information are reduced and the sequential processing can be trained to perform the assembly functions between the reading process.

The proposed exercises suggest a greater stimulation in the subject with dyslexia disorders, since motor aspects are unified with cognitive aspects in relation to the writing/reading process. The execution of these exercises involves a high level of sustained and divided attention due to the dual task involved. It is noteworthy to mention that the stimulation of the left temporal lobe (language) and parietal lobe (psychomotor skills), and frontal (fine psychomotor skills), are always present, in zones where the dyslexic subjects showed a lower activity. Furthermore, the circular learning process, community (group), and non-hierarchical tool serves to unlock through collaborative work on the subject with other psychological problems, which may affect the therapeutic actions of the same method. This could also be reflected in an increase in the degree of involvement and implication in the task, due to the great oxytocin releasing agent.

This would be met by each of the multiple origins of the disorder, working each of the brain areas involved in it, and once the main cause is detected in a neurologic level, identify the procedure and adapt it to the needs of each child and the uniqueness of each cognitive profile.

References


