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Opinion
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Potential of Movement Programming in the Cognitive Stimulation of Individuals with Intellectual Disabilities

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Opinion

Neuronal plasticity is an implicit resource that involves the nervous system. A strong potential for change makes the brain itself an ever-changing organ. In certain circumstances, as in the case of Neurodevelopmental Disorders, when this ability is not normally expressed, there may be a need to compensate for it with the learning of corrective or compensatory skills.

Some investigations [1] have been demonstrating that there are opportunities for change in the cognitive capacities of individuals with intellectual disability, demonstrating that such functions are not immutable and that we can choose to maintain the profile cognitive, if applicable, preventing cognitive decline and even promoting new learning skills.

Probably one of the limitations commonly found in this disabled population has to do with the intervention method. Access to and being able to stimulate certain brain structures is not a simple task.

Proposals appealing to verbal resources are quite frequent and more recently the use of technologies has come to dominate the design of training programs cognitive impairment for intellectually disabled children or adults [2-6]. However, despite all this, there is a little explored route that has been demonstrating its usefulness. It is the use of the body movement itself as a central element in the process of activating and controlling cognitive elements. It is a resource focused on the praxis function, with a good potential and that has been little publicized, but it has yielded some benefits in other contexts.

Imitation of Body Movements

The access routes to the engram of previously learned body movements can originate from a visual input. When the execution of the movement through imitation is requested, numerous brain areas end up intervening, as it will be necessary to transform the visual stimulus into a motor act. Such cortical areas have already been shown to contain mirror neurons, important elements in the understanding of motor acts. They will be supported by other brain areas as well such as the frontal and parietal lobes and the superior temporal sulcus [7], areas that together form the so-called "action observation network" [8] as well as the occipital lobe for visual processing.

Considering as a strong point the low verbal component in the execution of these tasks, it is possible to think that the imitation made from body movements, with or without meaning may be a way of accessing cognitive stimulation, where two distinct routes of cognitive processing will be involved [9]. For the first case, the indirect route will be used, as it involves the use of known motor programs, and in the case of making copies of new or meaningless movements, the stimulus would have a direct output, without deep processing for its execution, but always with the transformation of a visual input into a motor output.

In the event that the movement involves an object, semantic knowledge about the function of that object is important. Likewise, when we imitate a body movement, we are also inhibiting known similar stimuli [10] this may require areas of executive control associated with inhibition and behavior control.

Explanatory models of processing in praxic function have been referring to the complexity of well or poorly known brain activity [11,12] and in the specific case of individuals with intellectual disabilities the profile of praxic functioning [13] allows for an intervention to be carried out taking into account the processing of information not only at the entrance or understanding, also at the output or production of the motor act.

Taking into account the knowledge that individuals with intellectual disabilities have about the objects used in activities of daily living, we can build movements of the same level of complexity, transitive, intransitive or pseudo-gestures, in order to interact and create situations of cognitive intervention through the use of movements.

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