Opinion

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Effect of Cognitive Treatments in the Prevention of Cognitive Impairment and / or Dementia

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ABSTRACT

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Opinion

Since the mid-70s, the beginning of research on cognitive plasticity and the influence of the environment on the maintenance or cognitive decline of the elderly marked the beginning of a flourishing period of cognitive stimulation, cognitive rehabilitation, cognitive training, etc. in order to achieve optimal aging at the cognitive level Calero [1]. From these investigations it is accepted that the environment is a relevant variable in active aging; that the level of health, education and social relations positively affect cognitive maintenance in the elderly Hertzog et al. [2]; Scarmeas et al. [3] and that intellectual activity, once retired, plays a protective role Calero et al. [4]. Since the beginning of the XXI century, in all the centers of care for the elderly there is some type of program of cognitive intervention, combined or not with other resources: computer, physical exercise, psychological support (music therapy, etc.) with the aim of alleviating the negative cognitive effects of age. However, the review of the evaluations of many of these interventions has led to contradictory views and many articles have questioned their success, advising not to invest in some of the programs developed in previous decades.

Thus, for example the Consensus on brain training industry of the scientific community, published on October 20, 2014 and signed by the Institute of longevity of the United States and by the German Max Planck Institute for Human Development questioned the effectiveness of computerized cognitive training. A sample of this situation, and the interest in solving it, is found in the monograph on Psychological Research published in October 2014, coordinated by Schubert et al. [5], dedicated to methodological questions, physiological measures and variables that can determine the transfer of cognitive training in the elderly. Why has this effect occurred when reviewing the work done in such a promising line of research? From my point of view, this has been the consequence of a vertiginous development. The first works on cognitive plasticity marked a promising future because they broke with the traditional negative vision of cognitive decline, without solution, associated with old age. This, together with the increase in life expectancy, opened the possibility of having an optimal aging up to advanced ages with a little extra help. Therefore, many researchers, perhaps precipitously, began to conduct applied research in natural settings rather than controlled research in laboratories.

As we all know, work in natural contexts does not allow an appropriate sample selection, so in most of the work done, all relevant variables of the participant were not controlled: physical and cognitive status, life history, age, social support, etc. In addition, for ethical reasons, in many cases there was no control group and / or nor follow-ups. Second, each research or implementation group of these initiatives, interpreted very differently if it should be a program of stimulation, rehabilitation or cognitive training. They forgot about the long trajectory that educational psychology could bring in this area, the developments of Vygotsky and Feuerstein´s ideas Feuerstein about mediated education etc. and began to apply programs based on mere continued practice (following the scheme of neuropsychological rehabilitation) or based on the use of aids (strategies to preserve memory, training focused on reality) or simply focused on stimulation (visual, auditory or corporal). In a more elaborate second phase, these programs became multidimensional (training various skills together) computerized (applied with computer) or mixed (training cognitive and physical skills at the same time) but without any control of variables and

without evaluating the differential effect of each strategy included or each new variable involved.

Finally, in that position of "doing something, even if it is wrong", they forgot to determine what was the purpose of their intervention. This is: What was intended to change in the person trained with each program ?. This question is very important to evaluate the effects of a program, since the evaluation instruments of the same will have to be in accordance with its objective. The majority of the evidences found show us that it is possible to improve the trained areas, the problem has arisen when the research has wanted to verify the effect on other untrained areas Noack et al. [6]. Why measure cognitive status if what I train is visual memory? All this has meant that when making systematic reviews or meta-analyzes on this topic, the difficulty to carry them out and the difficulties in extracting conclusive results have given rise to this negative attitude about the effects of cognitive training on the cognitive maintenance or the prevention of deterioration and / or dementia. At this point, I think it can be said that there are important results derived from those three decades of research that should be considered: In the first place, the change of mentality emerged in society in general, in those who organize in the care of the elderly and the elderly themselves, about the fact that physical, social and cognitive activity has a positive effect on aging Staff et al. [7], but, sometimes, that supposed masking is maintained until death, so it is a positive effect, see book from Snowdom [8].

Thirdly, a series of effective strategies that work to maintain or increase cognitive status in the elderly have been observed: the use of process-centered training (of the mediated type) and not those based on repeated practice Sitzer et al. [9]; that address basic metacognitive skills, executive function or working memory, for example, Karbach et al. [10]; that take into account the specific skills necessary for a good performance: attention, memory, vocabulary (not forgetting the resources validated by the approaches on mediation, cognitive intervention and learning potential assessment, based on Vigotsky and Feuerstein). Work with group training and a trainer so that the intervention is at the same time on variables that are not strictly cognitive, such as motivation, group work and self-control Guye et al. [11]. To plan the sessions carefully to meet the objective of them and their generalization in natural contexts. To design an intervention program manipulating all the variables that can intervene in learning and adjusted to the group.

It is true that the learning rates are attenuated with age, but it has been proven that cognitive plasticity is maintained until very old ages if the person is still intellectually active Guye et al. [11]. Finally, it must be said that, with the aforementioned considerations, the positive effects have been found in healthy elderly people, elderly people with MCI and dementia, although in this last group with smaller amount, which indicates the need to start the training in stages previous to the presence of dementia. It is important not to forget that in some cases it has been found that a lower cognitive level of departure can lead to wider gains Salthouse [12]; so long as the program matches the starting level. In short, should not be considered a rejection of the development of cognitive intervention programs in the elderly but a review of the variables that have been shown as potentially useful and a terminological redefinition of the area that determines the characteristics that a cognitive training program should have for older adults, distinguishing it from mere stimulation and continuous practice, establishing what basic skills should be trained and designed as it should be taught: intervention strategies, groups, duration, etc. So that it meets the desired objective to have the elder.

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