

Executive Functions Training and Giftedness Capacitación en funciones ejecutivas y superdotación

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Abstract: The purpose of this article is to clarify the relationship between Executive Functions (EF) training and giftedness. In this paper we provide a literature review of condemnatory literature. Executive Functions are a set of cognitive skills considered as necessary for the cognitive control of behavior and they are important for self-regulation and adaptation. The proper functioning of the executive functions is associated with high IQ. Moreover, executive function training can be achieved by brain training programs, that aim to improve basic brain functions. Through education, various tasks are improved. Techniques that improve cognitive skills can benefit individuals with superior mental abilities and can be used as intervention techniques to improve and develop giftedness. The training of executive functions can be achieved through brain training. Brain training is a scientific field that has highly progressed over the last years and has offered extremely interesting results that lead to new developments in the field of giftedness. After analyzing what brain training is, we refer to the executive functions that can improve through brain training. Afterwards, we refer to brain training programs, which have had positive effects on the training of executive functions.

Key words: Executive Functions (EF), Brain Training, Brain Training Programs, Giftedness.

Resumen: El propósito de este artículo es aclarar la relación entre la formación de funciones ejecutivas y la superdotación. En este artículo proporcionamos una revisión de la literatura condenatoria. Las funciones ejecutivas son un conjunto de habilidades cognitivas consideradas necesarias para el control cognitivo de la conducta y son importantes para la autorregulación y adaptación. El buen funcionamiento de las funciones ejecutivas está asociado a un alto coeficiente intelectual. Además, el entrenamiento de la función ejecutiva se puede lograr con programas de entrenamiento cerebral, que tienen como objetivo mejorar las funciones cerebrales básicas. A través de la educación, se mejoran varias tareas. Las técnicas que mejoran las habilidades cognitivas pueden beneficiar a las personas con capacidades mentales superiores y pueden utilizarse como técnicas de intervención para mejorar y desarrollar la superdotación. El entrenamiento de las funciones ejecutivas se puede lograr mediante el entrenamiento del cerebro. El Brain Training es un campo científico que ha avanzado mucho en los últimos años y ha ofrecido resultados sumamente interesantes que conducen a nuevos desarrollos en el campo de la superdotación. Tras analizar qué es el entrenamiento cerebral, nos referimos a las funciones ejecutivas que pueden mejorar mediante el entrenamiento cerebral. Posteriormente, nos referimos a los programas de entrenamiento cerebral, que han tenido efectos positivos en el entrenamiento de las funciones ejecutivas.

Palabras claves: Funciones ejecutivas, Entrenamiento mental, Programas de entrenamiento cerebral, Superdotación.

Introduction

The concept of Executive Functions (EF) has been studied by many scholars in recent years. It is mainly a concept of the science of Neuropsychology, as well as other sciences, such as the Science of Education and Psychology. Defining EF is a difficult task because of a wide range of definitions that have been given, which also proves the complexity of the concept. Therefore, the term of EF is common in literature and has been approached from many different theoretical frameworks. Despite the multiple definitions and the possible sub-functions that make them up, the concept of EF still remains unclear, without a formal and

functional definition (Carlson et al., 2013).

EF are considered necessary to be able to better understand human behavior in all its aspects. EF are those skills that can help the person adapt to a continuously changing environment and suppress any non-desirable behavior, through self-regulation and adaptation, for their own benefits (Bernal, et al. 2021). We use all these cognitive processes constantly in our daily lives. They are involved in almost every activity from a simple one like concentrating on a task to a more complicated like resolving and unexpected issue or making the right decisions in a particular moment. EF are a set of cognitive skills considered as necessary for the control and regulation of behavior (Gilbert & Burgess, 2008).

According to Duggan and Garcia-Barrera (2015), EF and intelligence are constructs that consists of

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common conceptual elements. The proper functioning of the EF is associated with high IQ. Problem solving and insight concepts related to EF correspond to the behaviors of gifted individuals. According to Arffa (2007), EF are related to IQ and gifted students performed better in EF than non-gifted one. Rocha et al. (2020) conduct a study according to which they evaluated the EF in the academic performance. Two groups of students were considered (gifted and non-gifted students). The results showed significant differences in EF between the two teams.

In recent years there has been a lot of discussion about gifted students, who have special abilities and talents. The term of giftedness has been widely accepted by international community for several years and this is proved by the numerous studies, researches and articles that have been published (Callahan et al. 2015). Gifted students are often a neglected group, which can often be left on the sidelines, because there is a perception that they can do it on their own, due to their special nature, without needing further help. This formulation is a myth, which has greatly influenced public opinion. But we must not neglect the fact that gifted students are too important to be treated as students who have special educational needs. Therefore, there is a need to include them in the educational system through integration and the implementation of special educational programs (Van Tassel-Baska et Johnsen, 2007).

The conceptual clarification of giftedness, is not an easy task, since time to time various definitions have been formulated trying to explain it. Lewis Terman (1954) argues that the definition to the term of gifted is linked to the definition of intelligence. He and his colleagues conducted long-term research, studying 1,528 intelligent children from school age up to the age of 55. Their purpose was twofold, first to define the characteristics of children with high IQ and second, to monitor their development for as many years as possible. He and his associates, after modifying the Binet test, created the «Stanford-Binet Intelligence Scale». He set as a criterion the mental quotient over 140, creating different levels of gifted, the intelligent, the extremely intelligent and the intellect (Jolly, 2007).

One of the most prevalent definitions is that given by J. Renzulli (1986), according to which gifted behavior consists of behavior that reflects the interaction of three basic human traits: above average mental capacity, high degree of goal focus and high level of creativity. To be characterized as gifted, someone must develop these

three traits and apply them to many aspects of human activity.

According to Robert Sternberg (1984) and the Triarchic Theory of Intelligence, defining intelligence as a spiritual activity guided by a deliberate adaptation to a choice and in configuration life-related environmental conditions. The three factors are: 1) Analytical Intelligence: includes problem solving skills, 2) Creative Intelligence: includes coping with treatment and management of a situation based on previous knowledge, experience and skills, 3) Practical Intelligence: includes skills to adapt to a constantly changing environment (Sternberg, 1984). According to Heller (2005), Munch Model of Giftedness is a multifractional model, which consists of continuous interaction of all factors to highlight gifted behavior in combination with opportunities offered to the individual and the climate. Therefore, in order for a person to cultivate their talents, they must have all those favorable conditions that we described in order to increase their performance (Heller, 2005).

Gifted individuals are not a homogenous group but they all share some common characteristics. Many scholars have described in detail the characteristic of gifted individuals in a range of age phases, starting in preschool, continuing in school, in adolescence and reaching adulthood. Also, other scholars have described the characteristics in general, while others have focus more in specific areas of human knowledge. The characteristics that gifted children have that others do not are the following: they learn quickly, easily, effectively, have a wide range of interests, have creative thinking, provide many solutions and answers to problems, use problem solving techniques, achieve good grades in most fields, focus on the work they do, are curious, have original ideas, prefer to work alone, offer new solutions, pay great attention to the fields of knowledge, would like to study some topics more than others, ask a lot of questions and support their ideas and opinions (Josef, 2014). Moreover, they use the knowledge they already have in different ways, they set better goals, they closely monitor the progress of a goal they have set, they spend more time on planning, they spontaneously create a series of steps to solve one problem, they set priorities to guide the solutions, they have more insight skills, they get bored easily in class, they have a developed sense of humor, they have a wider knowledge of several topics, they are passionate about what they do, they take leading roles and they show spiritual concern.

Brain training is beneficial for EF and in turn to IQ, because brain training improves basic EF, such as memory and attention. Also through these practices enhance intelligence and improves the speed of information processing. According to Simons et al. 2016, the value of brain training is based on the fact that the learning of specific knowledge could be transferred and generalized to other contexts. Therefore the three variable that will thoroughly analyzed in the article are brain training, EF and IQ.

This paper is focused on EF. The concept of executive functioning and ways to improve them are presented. Over the last decades, numerous researches on brain training and how it can be used to enhance executive functions through these programs have been conducted. Functions that improve through brain training are also analyzed. Finally, the results show that everyone can benefit from the brain training, although this is considered particularly effective for gifted people.

Material and methods

The purpose of the study was to investigate the relationship between executive functions training and giftedness. Three are the variables that were analyzed brain training, EF and IQ. The method used to write the article was the bibliographic review method. We found many reports and articles. The literature on EF, brain training and giftedness is very broad. We search articles through search engines: Google Scholar and ResearchGate. The keywords we use to search for articles were executive functions, brain training, brain training programs, cognitive training, giftedness and gifted. One of the limitations of the research was that in the training of EF there are several scholars who argue that cognitive training programs have short-term validity because the improvements are not transmitted to long-term results. So we chose to find and study brain training programs, which had positive effects on improving executive functions. Through the literature review we tried to investigate if executive functions training helps giftedness and if brain training programs intend to improve functions. We found many articles on this scientific field during our research. Brain training is a scientific field that has highly progressed over the last years and has offered extremely interesting results that lead to new developments in the field of giftedness. We tried to find the latest research published in international journals. The search terms used were EF, brain training, brain training programs and giftedness.

Results

Conceptual approach of EF

According to Lezak (1982), EF are necessary for the following: 1) goal setting, 2) planning, 3) purposive action and, 4) effective performance. Those four components form the concept of executive functions and are considered behaviors necessary for an adult person who wishes to succeed in any personal goals. According to Stuss et al. (2002), EF are high level cognitive skills. Other researchers, like Royall et al. (2002) consider EF as cognitive skills responsible for the programming, continuum and regulation of a behavior and capable of controlling complex activities. The research of Elliott (2003) connects EF with the ability of resolving problems. Behavior changes when people receive new information and create strategies for completing complex actions.

There is a great deal of controversy among experts in the field of EF as to whether they should be considered as a single structure or as independent components. Some researchers believe that EF are part of an undivided structure that supports them (De Frias Dixon & Strauss, 2006), while other researchers claim the existence of many different EF without clarifying the way they can be connected to each other (Blair, Zelato, & Greenberg, 2005). However, there is also the combined approach, according to which, EF are in fact distinctive from each other but they share some common characteristics ensuring, this way, that they are united and diverse at the same time. Friedman et al. (2009) conducted research in order to prove that executive functions are indeed united as well as diverse. Their sample was 293 pairs of twins and the result of the research showed that inhibitory skills, informative skills and shifting skills have unity and diversity that can be attributed only to the DNA influences based on which they function.

Miyake et al. (2000) distinguished EF in three categories. First, shifting tasks also called cognitive flexibility which is the ability to switch between tasks. Second, updating and monitoring are directly related to working memory. It is basically a process where incoming information is encoded with the help of working memory. Third, inhibitory control which is the ability of the individual to prevent spontaneous and unwanted reactions when they are not needed and is a deliberate process.

Zelato (2015) claims that cognitive flexibility is the examination of a situation through different alternatives available in a particular case. Task memory plays an

important role in this, as it is responsible for maintaining information and attention. In addition, inhibitory control can contribute to cognitive flexibility, as it helps people leave out any useless information that distracts them from the task or stops any impulsive thinking. Those skills are interdependent on each other, since they cooperate for achieving a goal. Therefore, they are notably important for the completion of any task that needs focus, attention, organization, problem resolution, decision making and adaptation.

When we use the EF, specific areas of the brain are activated, which work together through a connected network. The brain areas that are related to the EF can be found primarily at the prefrontal cortex. The neural circuits that support these particular skills involve also other brain areas like the parietal cortex, as well as other structures like the basal ganglia, the amygdala and the hippocampus. Dopamine, norepinephrine and cortisol are the neurotransmitters that stimulate the brain areas that form the basis of executive functions. When the increase of the neurotransmitters is to a normal level, then the function of the prefrontal lobe is powerful and EF work properly. However, when the increase of the neurotransmitters is to a higher level, then the person can experience anxiety or stress, can present over or under stimulation and in this case the EF do not work properly (Blair, 2017).

Rivers (2011) considers EF and metacognition as identical concepts. Executive control seems to be related to metacognition, because both concepts involve the ability of examining and processing information. EF are made of two types of behavior: 1) self-evaluation, which means the ability of a person to evaluate themselves, therefore their self-esteem, and 2) self-regulation, which means the ability of a person to manage and evaluate their knowledge.

The development of EF is very fast during early childhood and continues during adolescence. Not all EF seem to follow the same development process (Passler et al., 1985). The first EF developed in childhood seems to be the ability to prevent and suspend any overreaction, while the last function developed seems to be word fluency (Jurado et al., 2007).

Rodríguez-Naveiras et al. (2019) examine the differences between the students with high capacities and with the average intelligence in working memory. In the meta-analysis 33 studies were analyzed included 609 gifted students and 969 non gifted samples. The results showed that gifted students performed better in verbal and visual working memory. Moreover, Rojas et

al. (2021) analyzed the relationship between EF and intelligence in gifted student. They studied 20 gifted students assessments by a school counselor. The participants had an IQ above 125. The results showed positive correlation between IQ and inhibition control.

Although the EF develop gradually over time and along with the maturation of the areas of the prefrontal cortex, cases have been observed that are not sufficiently developed. Problems in developing the EF are possibly related to intensive difficulties or disorders like Attention Deficit Hyperactivity Disorder (ADHD) (Silverstein et al., 2020; Korpa et al., 2020), autism (Demetriou, 2019) and dyslexia (Van Heugten, et al., 2016).

To sum up, EF include skills for setting a goal, programming, according through a plan and through parts of a plan and achieving effectiveness. Executive functions also include self-monitoring, resolving problems and cognitive flexibility (Jurado, & Rosselli, 2007). Despite researchers' disagreements over their definition and whether they form a single structure or independent components, executive functions seem to be the ones that set goals, create plans, solve them and successfully complete them in an ever-changing environment. EF role is critical in succeeding in education, employment and generally in everyday life. Gifted people are the ones who gather all these characteristics and who are capable of using their executive functions in the best way possible. For this reason, the improvement of EF for gifted people is considered necessary and can be achieved through brain training. All this can be achieved through the training of the EF of gifted individuals.

What is Brain Training?

Brain training is a scientific field that has highly progressed over the last years and has offered extremely interesting results that lead to new developments in the field of giftedness. There are a lot of programs, tools and exercises that aim to the executive functions' improvement through intensive training and practice. This kind of practices can modify the brain through a process refers as neuroplasticity (Van Heugten, et al. 2016). In addition, research in the field of brain training has shown that cognitive functions can be developed in a way that brain's everyday function depending on cognitive functions can be improve, too. Therefore, through brain training the lives of everyone in general can improve and benefit. Brain training is a very promising and challenging field, which can lead the

human brain to exceed its limits, however, it is not uncommon for brain training to have caused doubts in researchers about its effectiveness. This is an active and constantly evolving field that can overcome such issues. As a result, everyone could benefit from brain training.

Brain training or cognitive training is the enhancement and practice of cognitive functions through purposive cognitive exercise which aims to improve one or more cognitive functions. There have been published numerous studies that describe executive functions' improvement like memory, attention and processing information speed in people who had attended some educational program. This kind of programs addresses to many age groups like children, adults and the elderly. Intervention programs could aim to improve a specific area of practice or have a more holistic approach. Many studies have proven that the human brain shows an impressive ability to adapt in the changes of environment. That happens due to its' neuroplasticity that enables the brain to rebirth new neurons and to form new connections. This way, we can achieve the improved function of cognitive areas as well as shifting. However, it is also proven that developmental difficulties, as well as stress, can cause dysfunctions in brain's cognitive functions and affect its activity and development (Bryck, & Fisher, 2012). Many brain training programs use video games as teaching materials (Castillo-Retamal et al., 2021, Gomez-Gonzalvo et al. 2018, Navaro-Paton et al. 2021).

Brain training can improve a specific cognitive function or cognitive functions in general. The goal of brain training is that the benefits acquired can be transmitted to a wide area of tasks outside education. For example, a program that aims to improve memory task, the ability of processing and managing information would in fact also improve the ability of processing complex concepts, the perception of space, mathematical skills, logical conclusions, decision making and problem solving, all functions that are based on a good memory task (Pahor, 2018). Rabipour and Davidson (2015) created a questionnaire in order to look into beliefs and opinions in the effectiveness of brain training. The research was carried out online and 499 people took part. The result showed that the participants maintain a positive attitude towards brain training and are optimistic for its effectiveness.

According to Drigas and Karyotaki (2018), mindfulness is based on three core attention mechanics that constitute important skills. First, attention

orientation, second attention attraction and third, attention monitoring and focus. People who exercise these skills can stay focused for more time, avoid distractions and have minimized their impulsive behavior. This is a metacognitive skill as well as a knowledge technique, whose primary goal is to enhance higher cognitive functions, reaching mindfulness through the process of self-monitoring. That kind of practices can help gifted people improve their academic performance by achieving higher goals.

Which functions does Brain Training intend to improve?

The main goal of brain training is to change the way some basic brain processes work in order to make easier various tasks that humans have to do in their everyday life (Anguera, et al. 2013). The studies have shown that taking part in challenging activities can affect positively brain's function behaviorally (Green, 2003), normally (Landau, et al. 2011) and functionally (Wolinsky, et al 2006). Brain training intends to make better core brain's functions like memory, attention and executive functions. Some intervention programs target a specific cognitive function, but this kind of programs usually isolate particular mechanisms and therefore have a minimum impact on these functions. On the contrary, many researchers propose multiple educational processes that can target different cognitive functions through a variety of stimuli. One of the advantages of this approach is that the researchers have holistic view and they increase the chances of better learning results, which makes these programs more attractive for the participants (Hardy, et al. 2015).

The improvement of executive functions, responsible for processes like planning, guidance and examining an action, is considered the most important goal of brain training. Interventions that focus on executive functions mainly wish to achieve inhibitory control, shifting management and memory improvement. Even though executive functions consist of a number of processes, brain training can offer improvement in helping people adjust to and manage any changes in their environment (Pahor, et al. 2018).

According to Drigas and Karyotaki (2018), brain's neuroplasticity plays an important role to its neural and cognitive function. As people grow up, they experience a progressive loss of neural pores resulting in loss of system's flexibility. With neuroplasticity, the levels of hormones combined with environmental factors, like cognitive exercise, can lead to the birth of new neural networks.

Brain Training programs

According to Drigas and Pappas (2019), people can use techniques that improve their cognitive skills throughout their lives. There are many educational techniques that use ICT and are based on computer or smartphone applications or even videogames and can be used as intervention techniques for cognitive improvement and giftedness development. Vockaert and Noel (2015) made an intervention program intending to enhance executive functions and more specifically inhibitory control during the early childhood. This intervention included a series of games for inhibitory control improvement and used fictional characters in order to improve metacognition. The 47 participants in the study were split in an experiment group and a control group. The results showed that the experiment group performed better than the control group and this way the study proved that executive functions could be enhanced during early childhood.

Gallant (2016), based on the model of Miyake et al. (2000), tried to define if practicing meditation can improve executive functions in general or it only applies to specific cases. The review's results showed that meditation does in fact have a positive impact on executive functions, but it seems to work better on inhibitory control, according to the model of the three factors of Miyake et al. (2000). These results can be very encouraging for people who present deficits in attention like people diagnosed with ADHD.

Meditation is a conscious process, according to which the person should purposely focus their attention only on the stimuli of the moment. This way, executive functions can improve and higher level cognitive functions can be enhanced, through a process of self-regulation. This process also seems to reduce the levels of anxiety and stress. Short et al. (2015) conducted a pilot study in order to examine how meditation, through self-regulation and executive functions' enhancement, affects students experiencing academic stress. The results of the study showed that students did improve self-regulation and felt more self-confident .

Mayer et al. (2019) carried out a research with intends to examine the way cognitive functions and more specifically the executive function of shifting is improves by using videogames. The use of videogames can enhance the cognitive functions through a non-academic environment. Later, those improvements could be transferred into an academic environment supporting academic success. The research concluded that videogames do help in executive functions' training, but

it seems that the videogames which were more effective were those designed to improve or enhance one specific executive function.

Ballasteros et al. (2015) practiced brain training on elderly adults through a non-action videogame. The goal of the study was to examine whether non-action videogames can enhance the cognitive functions of elderly adults and whether or not the enhancement can be maintained after the end of sessions. In the study 40 healthy adults between 57 and 80 years old were randomly split to an experiment group and a control group. The former assisted to 20 sessions in 10-12 weeks. In every session, the experimental group practiced games selected by the platform «Lumosity», while the control group practiced specific computer games. The results demonstrated that the members of the experimental group had important improvements in terms of speed, processing, memory, and attention. In the contrary the control group did not show important signs of improvement. It is worth mentioning, however, that these positive results began to decline after three months, a fact that proves that periodical sessions are necessary for maintaining the enhancement of cognitive skills.

Traverso et al. (2015) conducted a study in order to examine the effectiveness of an intervention in terms of improving the executive functions between 5yearold children. More specifically they examined task memory, inhibitory control and cognitive flexibility. In the study, 75 children took part while the intervention had 12 sessions and lasted one month. The program aimed at improving the EF through small group activities that followed levels of difficulty, as gradually the activities became more demanding and the EF recruited by the kids were more complex. Children learned to be involved in activities that need co-operation and interaction, but, at the same time, changing roles taught them to be independent and control the game. Study results showed that the kids were able to improve their executive functions and, after developing inhibitory control, to process information better and faster and to manage cognitive conflicts more effectively.

Another study on executive functions' improvement during early childhood was made by Blakey and Caroll (2015). At the study 54 children around the age of 4 from the United Kingdom took part. Children were split into two groups: 26 of them formed the experimental group and the other 28 the control group. The program included four projects, two of them aiming at improving task memory and the other two the inhibitory

control. Task memory was trained through a game with recompenses and a game with images at which the participants had to remember images presented earlier. Inhibitory control was trained by a series of stimuli presented, while the children had to point out the direction of the central stimuli and through a process that the participants had to touch specific stimuli that appeared on the screen and avoid other. According to the results, the experimental group showed an important improvement in task memory compared to the control group. Moreover, the measurement that took place three months later showed that this improvement in EF had remained, proving long term benefits.

Hardy et al. (2015) carried out an intervention program of cognitive education in order to find out whether there are reliable results in the cognitive performance of the participants. The intervention was an online cognitive education program that included 49 exercises addressing an important number of cognitive skills. All participants came from the website «Lumosity» and the total number of people who intended to participate was 11.470. After the exclusions that came out, the total number of participants reached 9.919 people, who were divided to the experiment group and the control group. The intervention had a duration of 15 minutes for at least 5 days a week for 10 weeks. The experiment group had to practice five cognitive educational exercises that were related to the improvement of the speed of progressing, attention, memory, flexibility and the ability of resolving problems. On the other hand, the control group was instructed to solve as many puzzles, crosswords and riddles as they could during a given time. As demonstrated by the study results, the experiment group showed more signs of improvement in short-term memory, task memory and problem resolution than the control group.

Conclusion

EF are necessary to better understand human behavior in all its aspects. These are functions that help the individual to adapt to an ever-changing environment, allowing them to change their mental state immediately and to adapt to different conditions, while at the same time inhibit inappropriate behaviors. At the same time, they enable them to create a plan, take action and stick to it until it completed. The proper functioning of the EF is associated with high IQ. EF training can be achieved with brain training programs, that aim at improving

basic brain functions (Jaeggi et al., 2011). Through education, various tasks are improved. Individuals exercise daily, which can help them to improve their daily life (Nouchi et al. 2012). Techniques that improve cognitive skills can benefit individuals with superior mental abilities and can be used as intervention techniques to improve and develop giftedness (Stankov & Lee, 2020).

Brain training can address to anyone, as anyone could benefit by enhancing important cognitive skills of their brain. More specifically, brain training could help people who have issues or deficits in their basic cognitive functions or people with higher intellectual skills, like gifted. Gifted people have divergent and convergent thinking and originally thinking (Hong et al., 2019; Chen et al. 2019). However, brain training programs are not equally effective for all people, as specific programs could only work for a particular group of people. Therefore, each person needs a customized brain training program based on their needs and requirements. It is also a fact that brain training can be used for improving cognitive functions to people with special educational needs (Ballesteros, et al, 2015; Pahor, et al. 2018). In addition, brain training is considered notably effective between gifted people, as they have skills and abilities that can improve even more and brain training helps gifted people reach the highest level of the knowledge pyramid (Drigas, & Pappas, 2017).

According to James et al. (2011), exercising in brain training programs can lead to higher cognitive function and can improve fluid intelligence. According to Schweizer et al. (2011), extending brain training can improve not only abstract problem-solving capacity, but also cognitive control processes in our daily environments. Smid et al. (2020) consider that it is an indisputable fact that brain training programs improve EF which show increased efficiency in non-educational environments as well.

One of the limitations of the research was that in the training of EF there are several scholars who argue that cognitive training programs have short-term validity because the improvements are not transmitted to long-term results. So we chose to find and study brain training programs, which had positive effects on improving executive functions. In summary, we would like to point out that the issue we investigated in the present study is broad and needs further investigation. Many questions arise and are discussed in the educational community in general and the education of gifted students in particular. We believe that the above can be

the subject of further research and contribute to a discussion about the education of gifted individuals. Our research allows creating new opportunities from experimentation to carry out research that can explain and demonstrate results in the development of executive functions.

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