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Executive Functions In Children With Autism Spectrum Disorder: Perspectives On Specialists' Experiences And Perceptions

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Abstract

The purpose of this study was to investigate executive functions in children with ASD, exploring specialists' experiences and perceptions. The participants were selected from a group of specialists with ASD, who work in specialized centers and hold a master's degree, and their experience exceeded five years. The sample included nine participants. Using a form for demographic data, and a form for interview questions, the first question was discussed on two main axes, namely knowledge and its causes, and the second question was discussed on two axes, the future perception of centers and individuals with ASD, in addition to proposals for improving executive functions.

Keywords: Autism Spectrum Disorder ،ASD ،Executive Functions ،EF

Introduction

Autism Spectrum Disorder, as mentioned in the American Psychiatric Association, is a neurodevelopmental disorder that appears in the lack of social interaction, and the presence of restricted and repetitive behaviors (Eissa,2015,2016,2017a,2018a). These symptoms are in the early years of life (Ebrahim,2019; Mohammed& Mostafa,2012) Autism spectrum disorder is characterized by difficulty in social interaction and behavioral patterns, in addition to communication challenges, and language is one of the early symptoms of this disorder (Ahmed, 2016; Gawad, ,2015;Mortada,2017).

What is stated in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) on two main criteria instead of the previous three criteria mentioned in the DSM-IV (Atyya,2014; Błeszyński,2019, Najjar,2014). and nonverbal, and the presence of restricted and repetitive behaviors and unusual interests (Eissa,2018b; Soliman,2014).People with autism spectrum disorder are apparently heterogeneous at the time of diagnosis, especially in young children, in addition to the different severity in which symptoms appear turbulence (Eissa,2017b ;Fadl,2014; Mahmoud, 2015).

ASD affects many social, behavioral, emotional and cognitive characteristics, and some organizational problems in academic and daily life environments, in addition to some common symptoms that vary among people with ASD in their appearance and severity (Mohammed,2016), such as: self-harming behaviors, sleep and feeding disorders, and seizures. anger. Behavioral features of people with autism spectrum disorder have been described, in addition to the previously mentioned, the presence of abnormal patterns of sensory processing

regardless of the age or severity of symptoms, and it was recently added as a diagnostic criterion, which is either a lack of response to sensory stimuli (Tofaha,2012), or hyperresponsiveness, and this sensory processing is associated with impairment executive function. As a result, people with autism spectrum disorder are more likely to struggle in multiple areas including language, adaptive behavior, and academic performance (Mostafa ,2018).

ASD is associated with lifelong impairments in executive functions (Demetriou et al., 2017). Some evidence also suggests that executive function predicts later ASD traits, pre- and post-actual age adaptive behavior, intelligence quotient, and theory of mind, in contrast to the view that primary deficits in autism may arise from specific cognitive impairments (Eissa& Borowska-Beszta,2019). There are different opinions, but both opinions highlight the need to target the executive function of people with ASD.

Executive functions and executive deficiency

Executive function is a term that refers to both simple and complex cognitive mental processes that are activated when they need attention and focus (Pasqualotto et al., 2021). It has been described as a set of skills that are based on the brain; to implement goal-directed behaviors (Wang et al., 2022). It is divided into two models: the hot job model, which represents self-management skills in situations accompanied by heightened emotion, and the cold job model, which represents processes of self-regulation, which occur independently of emotion (Bourke et al., 2020). Executive functions include three main pillars: working memory, response inhibition and sustained attention, and cognitive flexibility or the so-called shifting of attention (Bourke et al., 2020).

It has also been categorized into three main areas: working memory (ElAdl & Eissa,2019) : it means the ability to retain information useful for decision-making, planning, and organizing, inhibition: it means the ability to voluntarily inhibit impulsive responses, and regulation: the ability to selectively switch attention between two tasks (Wang et al., 2022). The corresponding executive functions of the frontal lobe of the brain usually involve many processes such as working memory, attention, inhibition, cognitive flexibility, self-monitoring, and self-regulation (Pasqualotto et al., 2021). In addition to the initiative (Fong & Iarocci, 2020). Complex and basic executive functions continue to develop throughout early childhood and into middle childhood (Phung & Goldberg, 2019).

People with ASD display delayed development of executive functions, and poorer executive functioning abilities, particularly poor planning abilities, and cognitive flexibility, which cause problems in daily functioning (Phung & Goldberg, 2019). A study conducted by (Alsaedi et al., 2020) revealed the executive functioning abilities and developmental features of children with autism spectrum disorder, on a sample of 119 children with autism spectrum disorder, and 30 children of their peers ranging in age from 6 to 12 years. The results showed a deficit in the executive function of people with autism spectrum disorder when compared to other children, in addition to the heterogeneity of problems in the functional performance of people with autism spectrum disorder.

A study conducted by (Fong & Iarocci, 2020) on a sample of 132 children, including 77 children with autism spectrum disorder, ranging in age from 7 to 13 years, aimed to explore the relationship between

executive functions and social competence, which found: Weak executive function in emotional control and emotion regulation for people with autism spectrum disorder or others, while finding that the deficit of self-monitoring for people with autism spectrum disorder greatly explains the difficulties in social reasoning and social knowledge for people with autism spectrum disorder.

From this point; And given the increasing number of people with autism spectrum disorder in the Kingdom of Saudi Arabia, where the statistic, according to what was mentioned in the study (AlBatti et al., 2022), reached 1 in every 40 cases, and the researcher's recent knowledge of the executive functions of people with autism spectrum disorder, and the reflection of their improvement in social and independence daily life.

And the problems posed by executive dysfunction for people with autism spectrum disorder from the reality of experience, the researcher sought to know the reality of the scientific and practical experience of autism spectrum disorder specialists in executive functions, and their perceptions when adopting a proposed program to improve executive functions, and raise their efficiency in proportion to the cognitive abilities of people with autism spectrum disorder.

Autism, through this apparent qualitative research that is unique to this study, which may be a reason - God willing - to increase the Arab scientific frameworks of knowledge in executive functions, and to study the reality of knowledge of them, which contributes to the development of training programs, educational plans, and targeting cognitive processes In the early stages of people with autism spectrum disorder, and filling the gaps in the specialized educational curricula, in addition to raising teaching competencies.

Purpose

The purpose of this study was to investigate executive functions in children with ASD, exploring specialists' experiences and perceptions.

Study Questions

Given the importance of this study in bridging the scientific gap between knowledge and the reality of specialists, this study aimed to know the reality of the experience of ASD specialists in executive functions, and to know the future perceptions when training the executive functions of ASD specialists. These goals were represented in the following questions:

1. What is the reality of ASD specialists' knowledge of executive functions?

2. What are the future perceptions when training executive functions from the viewpoint of ASD specialists?

Method

The study sample

One of the basic procedures in preparing qualitative research interviews is the selection of individuals to be interviewed, as they are the best at answering questions . Accordingly, autism spectrum disorder specialists in the Autism Center of the Prince Mohammed bin Salman Autism and Developmental Disorders Program were selected, based on several previously defined criteria, namely, that the sample members: With autism spectrum disorder, to have a master's degree or higher, to have a minimum of 3 years of experience, and accordingly (9) autism specialists were selected out of (28), two of whom were identified as a pilot sample.

Data collection

The semi-structured interview questions were prepared in line with the theoretical frameworks and the research requirements of this study. The researcher was keen to include preliminary questions; To increase the familiarity between the researcher and the participant, and basic questions, in addition to follow-up questions when needed, after that, the researcher presented the interview questions to one of the doctors specialized in the field of special education and reviewed them, and modified them according to what fits with the aforementioned notes, and a request form for participation was uploaded to all female employees. In the Autism Center, the Prince Mohammed bin Salman Program, which is issued by clarifying the general idea of the research, the tool used, which is the interview, in addition to the expected time period for conducting the interview.

A suitable date has been set for them to conduct the interview in person, and to start with two survey samples; To ensure that the interview questions measured the objectives of the study, the researcher then submitted a "demographic" primary data form to verify the validity of the required criteria data. To conduct the interview for the study, a consent form for the interview protocol followed, in which I explained the purpose of the interview, the expected timing, confidentiality of information, voluntary participation in this research, freedom to withdraw, and the desire to participate in recording the interview, ending with interview questions, and finally, interviews were started in presence With the participations 21/2/2022 and completed on 3/08/2022, the average time was 45.6 minutes, where the longest interview lasted 63 minutes, while the shortest interview amounted to 30 minutes. This study is completed.

Data Analysis

Based on the requirements of the study, the objective analysis method was used, which relies on organizing and placing data in common under the main topics that the researcher sees, and that answers the questions of the study; In order to perform this analysis, the researcher empty the data verbatim; using Microsoft word in separate files according to the participants, after all interviews were finished, the texts were read, and re-read them again until they became very familiar, and listened again to the recordings, focusing on identifying the important points in each text and making brief notes, developing notes from all interview texts and coding them line by line, and creating broad topics for important data, followed by finding the connection between the coded statements, and then creating topics, collecting similar statements under each topic, reviewing the main topic, and for further development.

The encoded phrases under it, and each topic was named with a name that reflects the content of the phrases that pertain to it. The last stage included a review of the results to analyze the qualitative data collected, which tells the story of the statements by providing the various examples of the data through the statements of the interviews.

Results and Discussion

The results concluded in answering two main questions, which are as follows:

The answer to the first question: What is the reality of autism spectrum disorder specialists' knowledge of executive functions? The answer to this question included two main topics under which several sub-topics fall, as illustrated in Figure 1.

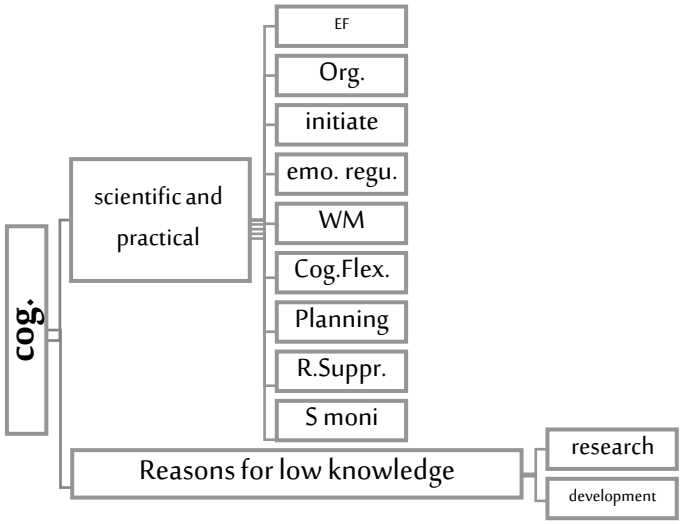

Fig.1. Cognition

First: Cognition

The development of knowledge is one of the foundations based on improving performance and improving work outcomes. This knowledge is built on a scientific basis based on theories and knowledge information taken from scientific sources. This axis refers to experience with its scientific sides; Which is meant by the amount of knowledge based on scientific foundations such as studies, research, specialized courses, knowledge of executive functions, and the practical side; Which means the actual application of scientific expertise during training sessions for individuals with autism spectrum disorder, and the first topic was divided into several sub-topics as follows: 1- Executive functions, 2- regulation, 3- Initiative, 4- response suppression , 5- Emotional regulation 6- Working memory 7- Cognitive flexibility 8- Self-monitoring 9- Planning.

1.executive functions: Executive functions mean the cognitive processes of the frontal frontal lobe of the brain, centered on eight dimensions: organization, initiation, inhibition, emotional control, working memory, cognitive flexibility, self-monitoring, and planning. The participants' opinions differed about the scientific concept of executive functions.

The participant (Q.2) indicated that it is a task that the individual must perform by saying: "I feel that it is a job that you are entrusted with. The individual does "The reason for what I did, right?" (C.1) also referred to the executive function as processes related to the brain, saying: "They are skills; the brain performs them to carry out any task," and agreed with (H.5) by saying: "They are things related to the brain, I expect that it is related to perception, response, or construction The child's knowledge, meaning his experience and experiences that he applies. This was agreed with (Cissne et al., 2021), where he referred to executive functions as a set of high-level cognitive processes that allow flexible modification of thought and behavior, in response to changing cognitive or environmental contexts.

2.Regulation:Regulation is one of the executive functions, whether it is behavioral or emotional (Torrado et al., 2017), and the participants' opinions agreed that regulation is the arrangement, and (h.3) indicated that "most children with

autism have organization." This contradicts the saying of Ni et al., 2020 that self-regulation is related to social relationships and continuous achievements according to developmental stages, and that self-regulation is prevalent in individuals with autism spectrum disorder.

On the other hand, the participants described some of the skills that are applied during the sessions, and that help to train the executive functions. (C.1) explained that they organize time during the session, saying: "Organizing time may be knowing when to start the task, and when it is finished; starting with a task Others." She also organizes the classroom environment. "We organize the classroom environment to know the plan of his activities during the session." (H.3) described the method of training children with autism spectrum disorder to organize that "organization is direct," and (G.4) agreed with it: "During the training, I mean direct organization so that he can know when the session ends, and that he needs to put everything back in its place. The right one," she explained with some examples used during the session, "The organization at the end of the session returns the tools to their place, and when using the tissues, they put them in the wastebasket."

3.Initiation: One of the main features of people with autism spectrum disorder is social communication challenges. Individuals with this disorder may struggle to: To demonstrate the basic social communication skills required to initiate and maintain interactions with peers in social settings, communication difficulties isolate people with autism spectrum disorder, impeding their opportunities to have and maintain positive peer relationships (Anthony & Bobzien, 2021).The responses of the participants varied with regard to their knowledge of the scientific concept of the initiative. With autism, whether it is closer to normal or not, some do not have the initiative".

On the practical side, both (C.1) and (Q.2) agreed that lack of initiative is a feature of autism, and (P.7) mentioned that ignoring dialogue with people with autism spectrum disorder is the reason behind not taking initiative, and she cited: I have observed my children, and children of another specialist who are distinguished by good dialogue, the children of the other specialist show a good improvement in the dialogue." Also, (S.2) and (H.3) agreed that the peace initiation training is one of the goals that serve the initiative, And (H.3) added, "In peace, for example, or knocking on the door, we train on it, but it was not as a direct goal of the initiative, but rather to generalize skills in conversational sessions." And (Q.2) added that the use of integration may be one of the effective goals of the initiative "integration". He will help him learn proactive skills such as peace and knocking on the door through his peers." This is consistent with (Sutton et al., 2021) in a study he conducted to measure the effects of social communication intervention through social stations implemented by the teacher in the classroom; To increase initiation and response behaviors for students with autism spectrum disorder, results have shown significant improvements in target behaviors, and continuity of improvement over time.

4.Response Suppresion: Responsiveness and sustained attention are one of the three main components of high-level cognitive abilities required for goal-directed behavior (Skogli et al., 2020). Some participants agreed in describing the scientific concept of stopping the response as stopping the behavior. This was agreed with (Bourke et al., 2020), who defined responsiveness as the ability to block initial responses to stimuli that are exercised. In what (H.5)

described it as “I don’t know, it may be incomplete vision or reaching half an idea instead of a complete idea,” and commented (M.6) “It is a response to something related to theories in psychology by scientists such as: Pavlov and Trondike, perhaps something It has proven its effectiveness in changing behavior.” And she answered (C.1) when she was asked to describe the concept of stopping the response as “stop responding! I don’t know”.

Given the weakness of response inhibitors for people with autism spectrum disorder, which was proven (Shi et al., 2020) in a study he conducted on individuals with autism spectrum disorder to measure response inhibition in the auditory, visual and verbal domains by completing a set of tasks, which concluded the weakness of visual response inhibitors The auditory and verbal expression of individuals with autism spectrum disorder compared to the control group and the group of individuals with schizophrenia. The participants explained that they performed exercises aimed at stopping the response, as (H.3) mentioned that one of her exercises in stopping the response is to order the child to stop crying during the training, and she explained: “For example, when the child cries, I ask him to calm down,” and she clarified (M.6). For example: “When the child has fits of laughter, I tell her to stop by saying: STOP, now she understands that.”

5.Emotional Regulation: A study conducted by (Li et al., 2020) over three consecutive years, on the early development of behavior problems, and the contributing role of emotional control in preschool children with autism spectrum disorder, showed that children with autism spectrum disorder have more behavioral problems than children with autism spectrum disorder. Their peers also showed lower levels of emotional control.

Participants described emotional control as the ability to control emotion, and (H.5) described it as “control, control,” and referred to it (M.6) when describing emotional control as “a psychological thing! It is a strong internal behavior of a person by which he controls his various emotions in situations.” different". This was agreed with (Hirschler-Guttenberg et al., 2015), where he referred to emotional regulation as the external and internal processes responsible for monitoring, evaluating and modifying emotional reactions to achieve an individual's goal.

6. working memory: Working memory is defined as the capacity to store and process information needed to perform complex cognitive tasks related to learning, thinking, and language processing (Delage et al., 2021). (G.4) mentioned, “Short-term memory, some call it short-term memory, which is capable of storing nine units at a maximum,” and (H.5) said, “I only know long and short-term memory,” as described by (M.6). It is the memory that is able to take and give, that is, it is able through its experiences to give responses, and is able to receive new experiences.

Working memory training is one of the main exercises for a child’s achievement of his goals, and this was explained by (c.1) by saying: “When he masters skills, he needs memory, to restore and repeat the skill,” and she agreed with (h.3) by saying: “Working memory all specialists perform By training it, because when teaching goals, it will depend on memory to save the goal, and this is a direct work for us with memory.” (M.6) mentioned some goals that depend on working memory “for example, matching, classification, teaching colors and concepts,” and the performance of working memory for people with different working memory varies. Autism spectrum

disorder from one child to another, and this was explained by (H.5), “For example, the visual memory of a child with mild autism when placing objects in front of him for five seconds can remember everything on the paper with all the details, other than moderate and severe.” There is a deficit in working memory that prevents the child’s improvement from appearing, and this was explained by (M.6) “I trained a child and after training her on the goal, she forgets it before reaching the stage of generalization, including social skills such as waiting for the turn, despite the fact that I used with her several methods of designing games Electronic and memory games adoption and others".

7.Cognitive flexibility: Cognitive flexibility is one of the challenges of autism spectrum disorder, which may explain the reasons for restricted and repetitive behaviors, and understanding cognitive flexibility skills is necessary to understand their behaviors (Lung & Bertone, 2021).

She described (p.7) after clarifying what is meant by flexibility, “...and the flexibility of knowledge to learn everything new.” She described (g.4) cognitive flexibility: “I accept new information,” and she indicated to her (h.5) “that I have more than an alternative in the provision of knowledge." As described by (P.6) “cognitive flexibility, I am acquirable and capable of learning experiences,” as (H.3) explained, “I do not expect that it is available for children on the autism spectrum, that he has the flexibility to build information on other information, or link it to it, This is roughly my interpretation,” he agreed with (Lung & Bertone, 2021) as describing cognitive flexibility as the ability to switch between concepts or rules.

8. Self-monitoring: Self-monitoring has an empirical evidence base that may be particularly useful in the transitional stages of autism spectrum disorder. Because it promotes independence, the implementation of a self-monitoring intervention can also address the unique needs of individuals with autism spectrum disorder, especially in later life stages (Watson et al., 2021).

The participants agreed to describe self-monitoring as the ability to observe behaviors, while (g.4) described it as “self-monitoring is knowing the consequences of behavior and organization,” and referred to it (h.5) “he who corrects himself,” as she described it (p.6).) "Self-monitoring is the same as self-management, which is defined as a training strategy for people with autism spectrum disorder." (H.3) described its use for the purposes of self-monitoring, saying: "I used to use self-monitoring with my cases, and I still expect it indirectly."

9. Planning: The inability to plan is one of the prominent problems for people with autism spectrum disorder, and building the planning skill needs an integrated team, based on the individual's social skills, social cooperation, self-care skills, independent living, transitional skills, and self-determination.

All participants agreed to describe planning as the ability to plan for the future, and the use of planning for children with autism spectrum disorder is one of the important things that reduce stress and anxiety for people with autism spectrum disorder, as (M.6) explained its planning during the sessions by saying : "When I teach her that now is the time for training, then we wash our hands, after that we move to the gym, she has a sequence during this hour", as she described it (H.3) "The planning may be when we play with dolls, I leave him the option to do By choosing the name of the doll, where it will go, and what it will eat, I don't know if this is planning or imagination."

Secondly, the causes of low knowledge

It is the second topic to answer the question of the study, and it has been divided as follows: 1- Research, 2- Development. Both sides include institutional development and personal development, as shown in Figure 2.

Fig.2 Reasons For Low cognition

1.Research: Modern research is one of the methods of renewing knowledge, and looking at the findings of studies in the specialized fields, especially if the specialization is the subject of renewal and change, and is characterized by ambiguity such as autism spectrum disorder. Such as attention to autism spectrum disorder from a medical and psychological point of view, knowing the scientific reasons, and appropriate and modern educational methods, and it also needs different efforts from individuals, such as the need to translate, publish or link between them sometimes. From the participants during the interview, referring to the need for research to be translated and published, and the different scientific titles in research sometimes, and the limited access to it.

She added with regard to the translation of the research, its monolingualism, and the ability to access it, "The digital library was opened only to university students, ... and English research in particular. I need a translation, maybe if there were Arabic research papers I would read." And (H.3) commented, "These researches may be in other languages such as English, German and French." This is what I mentioned (Alshehri, 2022) that Saudi universities lack the training of their students to research on the Internet , Knowledge of English vocabulary for research.

2. Development: Teachers who work in Excellence in Education must meet several criteria before and during their employment, they need to have a bachelor's degree in the discipline, as well as mentorship, background knowledge, and professional degree, and administrators must be prepared for any action in the event that teachers' behavior is illegal or harmful to children in any way, all this helps them to know about autism and be able to teach them (Alshehri, 2022). This is what institutions should be in order to achieve development. From this point of view, this topic has been divided into sub-topics: institutional development, which includes the educational aspect, the professional aspect, and personal development.

The answer to the second question, What are the future perceptions when training executive functions from the viewpoint of ASD specialists? The specialists had opinions and perceptions from different angles, and through the interviews, three main themes emerged, which are as follows: 1- The future perceptions of individuals with autism spectrum disorder, 2- The future perceptions of the centers, 3- Suggestions for improving executive functions, as illustrated in Figure 3.

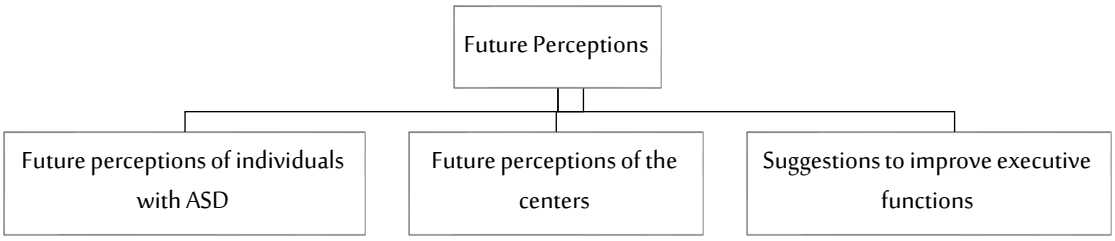

Fig.3 Future Perceptions

1.A future vision for individuals with ASD: The most important aspects that specialists with autism spectrum disorder discussed were their future perception, and most of the participants' opinions agreed on the effectiveness of training their executive functions. The results will be great, they will be closer to their normal peers, and in his youth he will have a job and a home, and he is completely independent, he will choose his profession himself, and it will not be random," I agreed (Q.2) "I feel it is a transitional addition to our children, we are now discussing memory problems With all departments, and this training will find a solution for us." She added: "If this training is used correctly, and there is cooperation from families and society, the child will be organized, proactive and independent, and the difference between him and any other child who has not been trained for executive functions will appear." And (P.7) stated, "He will be mature, and teaching them in this organized way will be an ideal thing." And (H.3) differed in her opinion from the future perception of people with autism spectrum disorder, which is due to many variables "depending on many variables, such as the level of the child , and treat family, but he will not reach his ordinary peers, and his independence will not be complete, even his self-determination will be an acquired matter." She agreed with her by saying: (g.4) "Maybe he will be closer to normal, but he will still be affected by this disorder, and there are many things to consider, as an interest families, and if it is accompanied by an ID.

2. Future vision for the centers: This topic deals with the future perception of autism centers on both sides, the specialized staff and the facility.

a. competent staff: Training, certification, and education are all examples of professional growth. Some professions require certain abilities. Workers need more talent in the future even if they have the right skills now. Workers can acquire skills through professional development to become more efficient employees. Workers go through a range of educational and training opportunities, and professional development may take many forms including online training programmes, certification, training, mentorship and counseling (Gul et al, 2021).

The participants raised the benefit of knowing the executive functions of the staff, as (C.1) "It can increase the effectiveness of our training, but it must be coherent during its training," and (Q.2) added, "It makes me better understand the child and the causes of his problems." And (g.4) commented, "It will make me better than the lives of children with autism." And (p.7) added, "We must focus on activities that serve executive functions." And (M.6)

stated, “it will change the employees’ motivation for training, and the training style, I feel that training in executive functions is very positive,” she said afterwards, explaining her desire for all staff to know about executive functions, “I want everyone to know that when they are trained and assessed for people with autism spectrum disorder, they are working on executive functions.”

B. Enterprise: One of the advantages that help establishments to maintain their employees is their professional development, and the development of facilities benefits the staff and customers who benefit from this facility, as well as the material and moral benefit of the facility and its management. Professional development for the employee helps the facility to reduce the material cost. and to retain its employees (Gul et al., 2021). Gaining their loyalty, raising productivity, and working under high quality standards that increase the confidence of its customers, and this is what (g.4) explained, “The facility will have high quality, which will contribute to high training outcomes.” One of its ways of serving customers, and this is what (p.7) mentioned, “The first thing this knowledge will add is to support the use of technology in the center.”

3. suggestions to improve executive functions

This topic deals with the participants' opinions on proposals to improve the executive functions of people with autism spectrum disorder. This topic deals with the following sub-topics: 1- Technology, 2- Exercise, 3- Sleep, 4- Environment, 5- Music.

1. Technology:The importance of appropriate professional development for special education teachers is to further improve their level, so that learning for children with autism spectrum disorder continues to be enhanced through technology. This allows meeting and evaluating their specific requirements (Gul et al, 2021), and this is what the participants agreed upon as one of the proposals to improve executive functions. Training of executive functions.” (H.3) touched on the need to pay attention to the child’s tendencies and desire for technology by saying: “I must make sure of the child’s inclinations to technology before using it in his weaknesses.” She added (p.7) with regard to methods to improve the executive functions of people with autism spectrum disorder, describing their need for them, "I must expose the child to a representative scene with technology through a video so that he realizes the danger".

2.Exercise: Aerobic exercise is one of the health and psychological treatment methods for individuals in general, and from this perspective (C.1) clarified its expectations regarding what may improve executive functions “Exercise, I feel that it benefits them, and running, marathon, and karate as well”, and this is what was agreed by a study (Phung & Goldberg, 2019), which evaluated the effectiveness of various martial arts in improving executive functions in school-age children with autism spectrum disorder, and concluded the effectiveness of these arts in improving their executive performance, and singled out (H.3) one of the exercises in improving Executive functions "Swimming can help him to organize, through body movements while swimming," and (c.1) agreed with (h.3) that horse riding improves executive functions, and (c.1) clarified the aspects that can To improve "his interaction with the horse, his discipline of feelings, there are many children that have benefited them."

3. sleep: Sleep loss has a strong impact on a number of cognitive functions, including ordering control and emotion regulation.

Previous studies have indicated that lack of sleep impairs executive functions (Floros et al., 2021), and sleep problems are one of the common problems of people with ASD. Autism. From this point of view, the participant (H.3) explained, "Regulating sleep and solving its problems may help improve executive functions".

4. Environment: One of the most important problems for people with autism spectrum disorder is the problems related to sensory aspects such as touch, hearing and sight. To the participants as one of the suggestions that may be behind improving the executive functions of individuals with autism spectrum disorder.

5. Music: Music is the summation of emotions that are difficult for a person to describe in words, and is transmitted directly to the person in music, and this is where its power and importance lies. Children with autism spectrum disorder often show signs of difficulties in processing emotional stimuli and social cues. This leads to problems in recognizing emotions in social interactions (Wagener et al., 2021). The participants indicated that music is one of the methods that may be a reason for improving executive functions, as (h.5) “It is possible to teach with music improves executive functions”, and this is what the results showed that music affects how children with autism spectrum disorder process faces. emotional, and musical interventions have already shown promising efficacy in increasing social skills in people with autism spectrum disorder (Wagener et al., 2021). The researcher concluded through the opinions of the participants during their presentation of the proposals that improve the executive functions, expand their horizons in the search for what is beneficial for people with autism spectrum disorder, and the desire to provide the appropriate services to the fullest.

Conclusion

Finally, Through this study, the researcher reached the novelty of the concept of executive functions for autism spectrum disorder specialists, and their lack of knowledge of the concepts of executive functions and programs targeted for executive functions, which reflects the need for specialists with autism spectrum disorder to develop their knowledge by attracting specialized competencies in the field, and the interest of the competent authorities in improving their outputs. Educational competencies by adopting high-quality training hours, adopting modern curricula and renewing educational plans in universities.

Limitation

This study was limited to female specialists with autism spectrum disorder in the Autism Center of Prince Mohammed bin Salman Autism and Developmental Disorders Program in the Kingdom of Saudi Arabia to know their experiences and perceptions of executive functions, and given the qualitative methodology of the study, the sample was intended according to specific criteria, and by the nature of this study, the results of this study do not Generalization, and the researcher suggests using quantitative research to accurately measure knowledge.

Recommendations

This study sought to know the experiences and perceptions of ASD specialists in executive functions, based on the findings of this study. Considering their development as a basis for seeking to improve training for people with autism spectrum disorder. The researcher also recommends that educational authorities reconsider study plans and curricula, adopt specialized training periods for students in higher education, and attract highly

qualified people from official bodies based on autism training centers; Since this study is the first of its kind - to the researcher's knowledge - in the expertise of ASD specialists with executive functions; It recommends that researchers are to measure knowledge quantitatively, and to increase the Arab scientific frameworks with the executive functions of people with ASD.

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