



The reality of Arab research in the Field of executive functions associated with the frontal lobe of the cerebral cortex: a study using the curriculum of remote analysis

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Abstract:

The current study aimed to identify the reality of Arab research in the field of executive functions associated with the frontal lobe of the cerebral cortex within nearly two decades, specifically in the period (2004- 2023 AD), using a curriculum beyond the analysis in terms of its classification according to the following: (the general field of research- the year of publishing- the gender of the

researcher- the nationality of researchers- the country where the research was conducted- the number of researchers- the publishing body- the educational stage- the type of sex Examination- research samples- methodological and research design used- sample size- methods and statistical tests used- the efficiency of various intervention programs and teaching strategies in developing executive functions associated with the frontal lobe of the cerebral cortex). In this study, I used a tool that is a card (a form) content analysis, and with a review of (114) Arabic research published and available with specialized Arab information rules. Eating executive functions associated with the frontal lobe of the cerebral cortex as one of the most important Naurisicom variables and the most influential in the Arab educational and educational field, with a sample of scientific periodicals and specialized electronic vascular vascular, and using repetitions The percentage of each axis of the study tool axis indicated that the research published in the specialty of educational psychology is the most in the amount of scientific production of Arab research in the field of executive functions, and that the number of male researchers in the Arab world is the most in conducting studies and research in the field of executive functions, as Egypt came first in the Arab countries in which these studies and research were conducted, and that the largest number of studies and research in the field of executive functions has been done It was published in the court magazines and periodicals, followed by research published in scientific conferences, as well as the prevalence of the phenomenon of executive functions research in Arab scientific production in the primary stage, and that the largest number of studies and research in the field of executive functions was conducted on samples consisting of (males and females together), on ordinary individuals, and that the largest number of studies and research in the field of executive functions was used in which the experimental curriculum was used, on, carried out on, carried out on. Samples are small, as the 'Man -Whitney' test issued the statistical tests used in those studies and research, and the most interventional programs and teaching strategies were used to develop and improve executive functions are cognitive intervention programs, and have found significant impacts of interventional programs and teaching strategies used in the development and improvement of executive functions in Arab research, and finally the size of the impact of interventional programs does not differ Teaching strategies for developing and improving executive functions in Arab psychological and educational research according to both the educational stage, the type of sex of the examiner, study samples, and sample size.

Keywords: Executive functions; A front Lobe Of The Cerebral Cortex; Done Analysis.



La réalité de la recherche arabe dans le domaine des fonctions exécutives associées au lobe frontal du cortex cérébral : une étude utilisant le programme d'analyse à distance

Résumé :

La présente étude visait à identifier la réalité de la recherche arabe dans le domaine des fonctions exécutives associées au lobe frontal du cortex cérébral au cours des deux dernières décennies, plus précisément entre 2004 et 2023, en utilisant un programme d'études allant au-delà de l'analyse en termes de classification selon les critères suivants : (le domaine général de recherche - l'année de publication - le sexe du chercheur - la nationalité des chercheurs - le pays où la recherche a été menée - le nombre de chercheurs - l'organisme de publication - le niveau d'éducation - le type d'examen sexuel - les échantillons de recherche - la méthodologie et la conception de la recherche utilisées - la taille de l'échantillon - les méthodes et les tests statistiques utilisés - l'efficacité des différents programmes d'intervention et stratégies d'enseignement dans le développement des fonctions exécutives associées au lobe frontal du cortex cérébral). Dans cette étude, j'ai utilisé un outil qui est une analyse de contenu de carte (un formulaire), et avec une revue de (114) recherches arabes publiées et disponibles avec des règles d'information arabes spécialisées. Les fonctions exécutives associées au lobe frontal du cortex cérébral constituent l'une des variables Naurisicom les plus importantes et les plus influentes dans le domaine de l'éducation et de la formation dans le monde arabe. À partir d'un échantillon de revues scientifiques et de publications électroniques spécialisées, et en utilisant des répétitions, le pourcentage de chaque axe de l'outil d'étude a indiqué que les recherches publiées dans le domaine de la psychologie de l'éducation sont les plus nombreuses dans la production scientifique arabe dans le domaine des fonctions exécutives, et que le nombre de chercheurs masculins dans le monde arabe est le plus élevé dans la conduite d'études et de recherches dans le domaine des fonctions exécutives, l'Égypte arrivant en tête des pays arabes dans lesquels ces études et recherches ont été menées, et le plus grand nombre d'études et de recherches dans le domaine des fonctions exécutives ayant été publié dans les revues et périodiques judiciaires, suivi par les recherches publiées dans les conférences scientifiques, ainsi que la prévalence du phénomène de la recherche sur les fonctions exécutives dans la production scientifique arabe au stade primaire, et que le plus grand nombre d'études et de recherches dans le domaine des fonctions exécutives a été mené sur des

échantillons composés (d'hommes et de femmes ensemble), sur des individus ordinaires, et que le plus grand nombre d'études et de recherches dans le domaine des fonctions exécutives a été utilisé dans lequel le programme expérimental a été utilisé, sur, mené sur, mené sur. Les échantillons sont petits, car le test « Man-Whitney » a publié les tests statistiques utilisés dans ces études et recherches, et la plupart des programmes d'intervention et des stratégies d'enseignement utilisés pour développer et améliorer les fonctions exécutives sont des programmes d'intervention cognitive. Des impacts significatifs des programmes d'intervention et des stratégies d'enseignement utilisés dans le développement et l'amélioration des fonctions exécutives ont été constatés dans les recherches arabes. Enfin, l'ampleur de l'impact des programmes d'intervention ne diffère pas selon le stade éducatif, le sexe de l'examineur, les échantillons étudiés et la taille des échantillons.

Mots clés : Fonctions exécutives ; lobe frontal du cortex cérébral ; analyse effectuée.



Introduction

The reader of the psychological and educational heritage in the field of executive functions of the brain can observe the tremendous development witnessed in this field recently; As it imposes many challenges on those responsible for education and training, and the follower of this development also notes that there is a huge amount of focusing on the learner enables organized analytical thinking and determining the goal and enables him to develop a plan to perform his tasks efficiently, and enables him to organize his environment and tools to reach the required goal, as well as enabling him to stop the inappropriate responses and control the timing of the start of implementing the tasks, enabling him Also from moving from one activity to another easily and flexibly, enables him to retrieve what he knows of previous information to apply it in any new situation that he faces and finally focus on his ability to monitor himself and review his performance and correct what may be in it wrong; To reach the best performance of his tasks, as the learner has become the focus of the educational process.

Psychological and educational research during the twentieth century, specifically at the end of it, witnessed important transformations in looking at cognitive mental processes, and this shift guarantees raising questions about what is going on within the brain's brain and how to form his mind (Ghanayem, 2021, 110), such as: his executive functions, as it represents the system that runs and controls the individual brain and helps him to manage and organize his daily life tasks as it works to move Responding to the

tasks entrusted to it, which is performed with ease and effectiveness, through a set of components: (planning, causal, controlling emotions, flexibility in thinking, memory operation, and attention (, which is undoubtedly very important to complex human behaviors, the most important of which is learning (Ismail, 2018, 1-2) .

Executive Functions Associated with the Frontal Lobe of the Central Cortex is a relatively modern concept in the field of cognitive nervous psychology, and these processes that control and regulate knowledge have become a field of interest in many researchers in recent years. These functions are used to describe a set of processes that are difficult to define, which are included in many activities such as problem solution, planning, starting or creating activity, cognitive estimate, and future memory; Where these operations were historically associated with the frontal lobe of the brain, which results in a variety of symptoms, which were previously known as the 'pre-lobe symptoms' (Hussein, 2007, 21).

The executive functions associated with the frontal lobe of the cerebral cortex are one of the most important components of the performance of individuals throughout their lives, as they enable them to work effectively with others, with distant dispersion and with multiple demands, in addition to that it contributes to the productivity of the workforce and through it the individual can manage a lot of information (Al -Dhia and Moses, 2023, 424), as it is the basic component of self -control and organizing. The power of will, so its effects appear on daily life skills, social interaction and academic performance (the person and others, 2020, 4) .

In this regard, Ali (2017, 276) believes that the executive functions associated with the frontal lobe of the cerebral



cortex are the total cognitive energy that regulates and controls all other capabilities and behavior, which are necessary and important functions in any behavior directed towards a specific goal, and include the ability to initiate or stop acts, monitor and change behavior when necessary, and plan future behavior when facing new tasks or positions; Such jobs help us to expect our behavior results, and to comply with changing situations.

On the other hand; Humanities - especially psychology - witnessed a huge increase in research published in the second half of the last century and the first and second decades of this century, which made thousands of researchers study the same topics with different results and are often contradictory, which led to scientists' search for the best ways to summarize research and studies and determine coherent forms of them in multiple areas (Ghanayem, 2021, 112) .

Meta- Analysis is one of the advanced approaches to the Empire of Studies and Research (Shercliffe et al)

In this context, both Yusuf (2012, 76) indicated; Ghanayem (2017, 98 - 99) indicated that the post -analysis is an analytical descriptive approach that began to grow increasingly in Europe, America and other countries of the world since 1976, and despite this great spread, he did not receive enough attention in Arab psychological and educational research, and then pay attention to this type of studies and research.

Al -Kanani (2002) and Abu Hashem (2005) agreed on the importance of applying the post -analysis method as one of the statistical methods that help analyze and install research and studies results

The curriculum of post -scientific analysis was used in psychological and educational sciences in many Arab studies and research, including: (Sherif, 1993; Abu Hashem, 2003, 2005; Skran, 2006; Youssef, 2012; Abu Hashem, 2015; Al -Khamiya, 2015; Ghanayem, 2017; Abu Hashem, 2020; Masshaneh and Al -Sharifin, 2020; Ramadan, 2021; And Ghanayem, 2021; The post -analysis of the task of reviewing and examining scientific production in Arab psychological and educational literature in the field of executive functions related to the frontal lobe of the cerebral cortex among different segments and groups of Arab community members .

- **Study problem:**

- What is the reality of Arab research in the field of executive functions in terms of the public field of research?
- What is the reality of Arab research in the field of executive functions in terms of the year of publishing the research?
- What is the reality of Arab research in the field of executive functions in terms of the type of researcher's sex?
- What is the reality of Arab research in the field of executive functions in terms of the country where the research was conducted?
- What is the reality of Arab research in the field of executive functions in terms of the number of researchers?
- What is the reality of Arab research in the field of executive functions in terms of publishing the research?



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- What is the reality of Arab research in the field of executive functions in terms of the educational stage in which the research was conducted?
- What is the reality of Arab research in the field of executive functions in terms of the type of sex of the examination that was done on the research?
- What is the reality of Arab research in the field of executive functions in terms of research samples?
- What is the reality of Arab research in the field of executive functions in terms of methodology and research design used?
- What is the reality of Arab research in the field of executive functions in terms of the size of the sample?
- What is the reality of Arab research in the field of executive functions in terms of methods and statistical tests used?
- What are the most used interventional programs and strategies used in developing and improving executive functions in Arab research?
- What is the size of the impact of interventional programs and teaching strategies in the development and improvement of executive functions in Arab research ?
- Is the size of the impact of interventional programs and teaching strategies in the development and improvement of executive functions in Arab research differ according to the educational stage?
- Is the size of the impact of interventional programs and teaching strategies in the development and improvement of executive functions in Arab research varies according to the type of sex of the examiner?

- Is the size of the impact of interventional programs and teaching strategies in the development and improving executive functions in Arab research differ according to the different samples of the study?
- Is the size of the impact of interventional programs and teaching strategies in the development and improvement of executive functions in Arab research varies with the size of the sample?

Study objectives

The current study objectives are the following:

- Introducing the Arab reader in the field of psychological and educational research to the approach of post - analysis as a modern approach in the research of executive functions related to the frontal lobe of the cerebral cortex in Arab psychological and educational research in different segments and groups of Arab community members.
- Learn about the reality of Arab research in the field of executive functions associated with the frontal lobe of the cerebral cortex during the period (2004-2023 AD).

The importance of study

The current study acquires its importance at the theoretical and applied levels as follows:

- This study constitutes a necessary step towards strengthening the research of executive functions associated with the frontal lobe of the cerebral cortex and its integration in order to provide more persuasive interpretations of many psychological and educational phenomena with an important statistical approach, which is the curriculum of post -analysis.



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- The current study is an attempt and diligence on a serious scientific basis of researchers in being dating for the development of scientific publishing movement in the field of executive functions associated with the frontal lobe of the cerebral cortex with Arab psychological and educational research to provide a brief guide for the reality of research that was implemented in the field of executive functions related to the frontal lobe of the cerebral cortex in different segments and groups of Arab community members during the period from.(2023 - 2004)
- .3This study contributes to the provision of Arab psychological and educational scientific research in the field of executive functions related to the frontal lobe of the cerebral cortex, especially in light of the scarcity of previous Arab research that was concerned with the executive functions associated with the frontal lobe of the cerebral cortex in light of the post - analysis approach to the results of the research published according to the science of researchers.

Study terms

- **Executive Functions Associated with the Frontal Lobe of the Corn Cortex :**

The researchers define it as' a comprehensive term for the higher functions of the brain located in the frontal (front) lobe of the cerebral cortex and represents the highest level of cognitive hierarchy, which plays a supervisory role in thinking and behavior; It includes a number of neurotological processes that work together in harmony and

integration to guide and coordinate the individual's effort to achieve the desired goal .

- **Meta- Analysis Method :**

It is a descriptive systematic approach aimed at statistical analysis of the research heritage that dealt with the same hypothesis, and includes a full analysis of all related studies and research that describes the results of each study through a quantitative index to measure the size of the effect, so that the accurate estimate of the effect of treatment on a variable is provided by combining these estimates through studies and research, and provides a logical framework for a research review of studies and research that have similar and compliance procedures For comparison '(Ghanayem, 2021, 116).

- **Arab Research :**

In the current study, it is intended to 'Arab psychological and educational research that dealt with the executive functions associated with the frontal lobe of the cerebral cortex in different segments and categories of members of the Arab community and published in some specialized Arab academic periodicals and e -vessels controlled during the period from (2004-2023 AD).'

Study limits

The current study was applied according to the following limits:

1. **The temporal borders:** The current study was limited to Arab research that dealt with the executive functions associated with the frontal lobe of the cerebral cortex published in some specialized Arab scientific e -vessels



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and vascular governed during the period from (2004-2023 AD) .

2. **Spatial borders:** The current study was in seven Arab countries: (Egypt, Algeria, Kuwait, Tunisia, Saudi Arabia, Jordan, Iraq)
3. **Human borders:** The current study was limited to Arab research, which were samples of ordinary students and students with special needs in the stages of public education (kindergarten - primary - preparatory 'middle' - secondary) and higher education (Bachelor of Bachelor - Bachelor - High Studies), and did not address research that was samples of teachers, teachers, faculty members, doctors, etc.

Method and procedures

It includes the most important steps that have been followed, statistical treatments, and analysis results.

1. Study Method :

The researchers used the descriptive analytical approach through the post -analysis method, to suit the nature of the current study.

2. Study sample :

The current study went to analysis (114) previous Arab research and study that dealt with the executive functions associated with the frontal lobe of the cerebral cortex among ordinary individuals and people with special needs, whether descriptive or experimental interventional using interventional programs and teaching strategies to improve

or develop executive functions in the brain provided that the study included in the analysis contains the following data: (the general field of research- year of publication- gender gender- sexual- sexual Researchers- the country where the research was conducted- the number of researchers-publishing body- the educational stage- the type of the test of the examiner- research samples- methodology and research design used- the size of the sample- methods and statistical tests used, and the data needed to calculate the size of the effect), and that the study be published in one of the specialized Arab electronic vessels controlling whether it is scientific conferences or known scientific journals.

3. Study steps

- ❖ **Choosing the topic:** The subject of the current study is determined in 'executive functions associated with the frontal lobe of the cerebral cortex' for the following reasons :
 - A. The field of executive functions in the brain has received a great deal of interest in the Arab environment since its appearance until now, and despite this, no Arab study - within the limits of seeing researchers - was conducted to identify the reality of Arab research in the field of executive functions related to the frontal lobe of the cerebral cortex using the curriculum of remote analysis.
 - B. What many foreign and Arab studies have emphasized about the importance of executive functions as an influential factor in the success of the educational process, and these studies include: (Shalaby, 2012; Stanzione & Schick, 2014; Al -Khorasiti, 2017; and Ismail, 2018; And happiness, 2021; and Bouzad and Safran, 2022; and Suleiman, 2022) .



❖ **Choosing previous studies and research related to the topic:** The following determinants of the selection of previous studies and research have been set :

- A. Arab Studies and Research that dealt with the executive functions associated with the frontal lobe of the cerebral cortex among ordinary individuals and people with special needs published in some specialized scientific leagues and specialized Arab electronic vessels controlled during the period from (2004-2023 AD).
- B. Studies and descriptive research, as well as in its experimental design, used a specific training program or strategy to improve or develop executive functions in the brain.
- C. Studies and research that included the necessary data to calculate the size of the effect such as the value of the statistical test, the average, standard deviations and sizes of samples.

❖ **Classification of previous studies and research in accordance with the variables:** After research related to the subject (the executive functions of the brain) has been chosen, and the number is (114) research.*

Also, research was classified according to the following changes:

- A. **The general field of research:** Research was classified according to the general field of research into six areas: (educational psychology, special education, curricula and

teaching methods, education technology, kindergarten, and physical education sciences).

- B. Publishing Year:** Research was classified according to the publication for (20 years) during the period from (2004-2023 AD).
- C. The type of researcher's sex:** Research was classified according to the gender of the researcher to three levels: (males, females, males and females together).
- E. The number of researchers:** Research was classified according to the number of researchers who conducted the study to four levels: (one researcher, researchers, three researchers, and four researchers).
- F- Publishing authority:** Research was classified according to the entity that was published to two levels: (a scientific journal and patrol- a scientific conference).
- G- Educational stage:** Research was classified according to the educational stage in which it was conducted to six levels: (kindergarten, primary, and middle school, high school, university, and postgraduate studies).
- H- Examined sex type:** Research has been ranked according to the type of sex to three levels: (males, females, males and females together).
- I- Research samples:** Research has been classified according to the research samples that were conducted to seven levels: (normal, people with learning difficulties, mentally superiority with learning difficulties, ancient ADHD, mentally handicapped, visually handicapped, and hearing disabled 'deaf').
- J- The various intervention training strategies and activities used to develop and improve executive functions:** Research has been classified according to this



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variable into two parts: (cognitive intervention and intervention through teaching strategies).

Methodology and research design: Research, according to the methodology, was classified into three research curricula: descriptive, semi -experimental, and experimental. Research has also been classified according to the research design into two types: (one experimental group), (an experimental group and a control group).

K- The sample size: Research was classified according to the sample size to three levels: small size (less than 30 individuals), average volume (from 30 - 100 individuals), and a large size (more than 100 individuals).

L- Statistical tests used: Research was classified according to the statistical tests used into six statistical tests.

4. Study procedures

The following procedures were followed :

- The results of previous studies and research are collected according to the previous determinants.
- Enter the previous data into the SPSS V26 statistical program in preparation for its processing.
- A set of orders for the SPSS V26 statistical package to calculate the size of the effect.

Study results

To answer the first question of the study, which is 'What is the reality of Arab research in the field of executive functions in terms of the public field of research?' Studies and research were examined and classified according to the general field of research into six areas, so the results were as the following table:

Table 01: Classification of studies and research according to the general field of research

Percentage %	Research number	The general field of research
%42.11	48	Educational psychology
%28.94	33	Special education
%7.9	9	Curricula and teaching methods
%2.64	3	Education technology
%14.04	16	Kindergarten
%4.37	5	Physical Education Sciences
%100	114	total

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from schedule (1) that the largest number of studies and research that dealt with the executive functions associated with the frontal lobe of the cerebral cortex was in the field of educational psychology by a percentage of (42.11%) and by (48) research, then the field of special education by a percentage of (28.94%) and by (33) research, followed by the field of kindergarten by a percentage of (14.04%) and by (16) Research, then the field of curricula and teaching methods by a percentage of (7.9%) and by (9) research, the field of physical education sciences by a percentage of (4.37%) with (5) research, and finally the field of education technology by a percentage of (2.64%) and by (3) research. This means that research published in the specialty of educational psychology is the most in the



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amount of scientific production from research in the field of executive functions associated with the frontal lobe of the cerebral cortex.

To answer the second question of the study, which is **'What is the reality of Arab research in the field of executive functions in terms of the year of publishing the research?'** Studies and research were examined and classified according to the publication year to (20 years) during the period from (2004-2023 AD), and the results were the following table :

Table 02: Classification of Studies and Research according to the year of publishing the research

Percenta ge %	Resear ch numb er	Publishi ng year	Percenta ge %	Resear ch numb er	Publishi ng year
%6.14	7	2014	%1.75	2	2004
%5.26	6	2015	%3.51	4	2005
%7.02	8	2016	%1.75	2	2006
%7.90	9	2017	%2.63	3	2007
%6.14	7	2018	%3.51	4	2008
%7.90	9	2019	%2.63	3	2009
%8.77	10	2020	%1.75	2	2010
%7.02	8	2021	%4.39	5	2011
%11.40	13	2022	%3.51	4	2012
%2.63	3	2023	%4.39	5	2013
%100	114	Total			

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from schedule (2) that the distribution of studies and research in the field of executive functions associated with the frontal lobe of the cerebral cortex according to the years of publication extended between (2004-2023 AD) and came in (2022) in the first rank with a percentage of (11.40%) and by (13) research, followed by (2020) percentage of (8.77%) and with (10) research, and a general equal equalization (2017, 2019) by a percentage of (7.90%) and by (9) research each, as well as (2016, 2021) a percentage of (7.02%) and by (8) research each, as well Celsius of (5.26%) and by (6) research, general equality (2011, 2013) by a percentage of (4.39%) and with (5) research each, and the years (2005, 2008, 2012) by a percentage of (3.51%) and with (4) research each, as well (2.63%), with (3) research for each of them, as well as the years (2004, 2006, and 2010) by a percentage of (1.75%) and (2) two research each. It was also evident in the spread of research during the period from (2014 - 2022) and its decline during the period from (2004-2013), and the year (2022) remains the most in the amount of scientific production of Arab psychological and educational research in the field of executive functions related to the frontal lobe of the cerebral cortex.

To answer the third question of the study, which is '**What is the reality of Arab research in the field of executive functions in terms of the type of researcher's sex?**' Studies and research have been examined and classified according to the gender of the researcher to three levels: (males, females, males and females together), the results were the following table :



Table 03: Classification of Studies and Research according to the type of researcher's sex

% Percentage	Iteration	The gender of the researcher
%61.40	70	Male
%24.56	28	Female
%14.04	16	Male and female together
%100	114	Total

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from Table (3) that there are (114) researchers in the Arab world who have been interested in conducting studies and researches in the field of executive functions related to the frontal lobe of the cerebral cortex during the period (2004-2023), where researchers (male only) ranked first with a percentage of (61.40%) and (70) researches, while researchers (female only) ranked second with a percentage of (24.56%) with (28) researches, while researchers (males and females together) came in third and last place with a percentage of (14.04%) In fact, (16) researches. This indicates that the number of male and female researchers, whether alone or in the Arab world, are conducting studies and researches in the field of executive functions related to the prefrontal lobe of the cerebral cortex.

In order to answer the fourth question of the study, which is **'What is the reality of Arab research in the field of executive functions in terms of the country in which the research was conducted?'** The studies and researches were

examined and classified according to the country in which the research was applied to eight Arab countries, and the results were as follows :

Table 04: Classification of studies and research according to the country in which the research was conducted

%	Iteration	Country in which the research was conducted		%	Iteration	Country in which the research was conducted	
%5.26	6	Yemen	5	%64.03	73	Egypt	1
%3.51	4	Saudi Arabia	6	%4.39	5	Kuwait	2
%1.75	2	Tunisia	7	%7.02	8	Algeria	3
%6.14	7	Iraq	8	%7.90	9	Jordan	4

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from Table (4) that there are eight countries in the Arab world in which studies and researches were conducted in the field of executive functions related to the prefrontal lobe of the cerebral cortex during the period (2004-2023), where Egypt ranked first with a percentage of (64.03%) and (73) researches, and by a wide difference, followed by the State of Jordan in second place with a percentage of (7.90%) and (9) researches, then the State of Algeria came in third place with a percentage of (7.02%) and (8) researches, followed by the State of Algeria in the third place with a percentage of (7.02%) and (8) researches,



followed by the State of Algeria in the third place with a percentage of (7.02%) and (8) researches, followed by the The fourth place is the State of Iraq with a percentage of (6.14%) and (7) researches, then the State of Yemen came in fifth place with a percentage of (5.26%) and (6) researches, followed by the State of Kuwait in sixth place with a percentage of (4.39%) and (5) researches, then the State of Saudi Arabia came in seventh place with a percentage of (3.51%) and (4) researches, and the State of Tunisia came in the eighth and last place with a percentage of (1.75%) with only two researches, which indicates the disparity of the interest of researchers in the countries The Arab world in the field of executive functions related to the prefrontal lobe of the cerebral cortex.

In order to answer the fifth question of the study, which is **'What is the reality of Arab research in the field of executive functions in terms of the number of researchers?'** The studies and research were examined and classified according to the number of researchers who conducted the study into four levels: (one researcher, two researchers, three researchers, and four researchers), and the results were as follows in the following table :

Table 05: Classification of Studies and Research according to the number of researchers

Percentage %	Iteration	The number of researchers
%75.44	86	One researcher
%12.28	14	Two researchers
%9.65	11	three researchers
%2.63	3	Four researchers
%100	114	Total

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from Table (5) that the number of researchers in the Arab world who were interested in conducting studies and researches in the field of executive functions related to the prefrontal lobe of the cerebral cortex during the period (2004-2023) is limited to one to four researchers, where the ranking of studies and researches carried out by one researcher came in first place with a percentage of (75.44%) and (86) researches, followed by studies and researches conducted by two researchers in the second place with a percentage of (12.28%) and (14) researches. Studies and researches conducted by three researchers ranked third with a percentage of (9.65%) and (11) researches, while studies and researches conducted by four researchers ranked last with a percentage of (2.63%) and (3) researches. This indicates the prevalence of the phenomenon of conducting individual research in scientific production related to the field of executive functions related to the frontal lobe of the cerebral cortex in the Arab world.



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In order to answer the sixth question of the study, which is **'What is the reality of Arab research in the field of executive functions in terms of the publisher of the research '?,** Studies and researches were examined and classified according to the entity in which they were published into two levels: (journal and scientific journal - scientific conference), and the results were as follows in the following table:

Table 06: Classification of Studies and Research for the Entity in which they were Published

Percentage %	Iteration	Research Publisher
%92.10	105	Journal and Scientific Journal
%7.90	9	Scientific Conference
%100	114	Total

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from Table (6) that the largest number of studies and researches in the field of executive functions related to the prefrontal lobe of the cerebral cortex were published in peer-reviewed journals and journals with a percentage of (92.10%) and (105) researches, followed by researches published in scientific conferences with a percentage of (7.90%) and only (9) researches.

In order to answer the seventh question of the study, which is **'What is the reality of Arab research in the field of executive functions in terms of the educational stage in which the research was conducted?'** The studies and

researches were examined and classified according to the educational stage in which they were conducted into six levels, and the results were as follows :

Table 07: Classification of Studies and Research according to Educational Stage

Percentage %	Iteration	Educational Stage
%20.17	23	Kindergarten
%48.25	55	Primary
%11.40	13	Preparatory 'Intermediate'
%7.02	8	Secondary
%9.65	11	University
%3.51	4	Postgraduate Studies
%100	114	Total

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from Table (7) that the largest number of studies and researches in the field of executive functions related to the prefrontal lobe of the cerebral cortex were conducted in the primary stage, where it ranked first with a percentage of (48.25%) and (55) researches, followed by the kindergarten stage in the second place with a percentage of (20.17%) and (23) researches, then the preparatory stage 'medium' ranked third with a percentage of (11.40%) and (13) researches, then the university stage in the fourth place with a percentage of (9.65%) and (11) researches. Then the secondary stage came in fifth place with a percentage of (7.02%) with (8) researches, while the postgraduate stage ranked sixth and



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last with a percentage of (3.51%) and (4) researches. This indicates the prevalence of the phenomenon of conducting research on executive functions related to the frontal lobe of the cerebral cortex in Arab scientific production at the primary stage.

In order to answer the eighth question of the study, which is **'What is the reality of Arab research in the field of executive functions in terms of the gender of the subject on whom the research was conducted'**? The studies and researches were examined and classified according to the gender of the examiner into three levels: (males, females, males and females together), so the results were as follows:

Table 08: Classification of Studies and Research according to Gender of the Examiner

Percentage %	Iteration	Gender of the examined
%15.79	18	male
%9.65	11	female
%74.56	85	males and females together
%100	114	total

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from Table (8) that the largest number of studies and researches in the field of executive functions related to the prefrontal lobe of the cerebral cortex were conducted on samples consisting of (males and females together) with a percentage of (74.56%) and (85) researches, followed by

studies and researches conducted on samples of (males only) with a percentage of (15.79%) and (18) researches, and finally the studies and researches conducted on samples of (females only) with a percentage of (9.65%) and (11) researches.

In order to answer the ninth question of the study, which is **'What is the reality of Arab research in the field of executive functions in terms of research samples?'** The studies and research were examined and classified according to the research samples conducted on them into seven levels, and the results were as follows:

Table 09: Classification of Studies and Research according to the Research Samples Conducted

Percentage %	Iteration	Research Samples
%59.65	68	Normal Individuals
%20.18	23	Individuals with Learning Disabilities
%7.02	8	Mentally Gifted Individuals with Learning Disabilities
%5.26	6	ADHD Individuals
%3.51	4	Mentally Disabled Individuals
%1.75	2	Visually Impaired Individuals
%2.63	3	Hearing Impaired Individuals 'Deaf'
%100	114	Total

Source: Prepared by researchers based on the outputs of the EXCEL program



It is clear from Table (9) that the largest number of studies and research in the field of executive functions associated with the frontal lobe of the cerebral cortex was conducted on ordinary individuals, as it ranked first with a percentage of (59.65%) and by (68) research, followed by the category of individuals with learning difficulties in the second rank with a percentage of (20.18%) and by (23) research Mental excelling individuals with learning difficulties in the third place with a percentage of (7.02%) with (8) research, then the category of individuals disturbed and hypothetical ADHD in fourth place with a percentage of (5.26%) and with (6) research, and the category of individuals disabled visually ranked fifth with a percentage of (3.51%) and in reality (4) Research, then the category of disabled individuals came in the sixth place in the sixth percentage of (2.63%) and with (3) research, while the visual disabled individuals category ranked seventh and last by a percentage of (1.75%) and only two research. Which indicates the prevalence of the phenomenon of executive functions research related to the frontal lobe of the cerebral cortex in Arab scientific production on ordinary individuals. And to answer the tenth question of study, which is 'What is the reality of Arab research in the field of executive functions in terms of methodology and research design used?' " Studies and research have been examined, classified and classified according to the methodology into three research curricula: descriptive, semi -pilot, and experimental. Research was also classified according to the research design into two types: (one experimental group), (an experimental group and a control group), the results were the following two tables:

Table 10: Classification of Studies and Research according to the curriculum used

Percentage %	Iteration	Type of the curriculum used
%28.95	33	The descriptive approach
%18.42	21	The semi -experimental approach
%52.63	60	The experimental approach
%100	114	<i>المجموع</i>

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from Table (10) that the largest number of studies and research in the field of executive functions associated with the frontal lobe of the cerebral cortex was used in a percentage of (52.63%) and by (60) research, followed by studies and research that used the descriptive curriculum by a percentage of (28.95%) and with (33) research Experimental percentage of (18.42%) and (21) research.



Table 11: The research designs used in the implementation of interventional programs and teaching strategies in the field of executive functions related to the frontal lobe of the cerebral cortex in Arab psychological and educational research

Percentage %	number	Procedures	Research design
%17.28	14	Tribal measurement - implementation of the program/ strategy - a distant measuring	only one experimental collection
%82.72	40	tribal measurement - implementation of the program/ strategy - a afternoon measurement	Experimental collection + control group
	27	pre -measurement - implementation of the program/ strategy - after measuring - follow -up measurement	
%100	81	Total	

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from the (11) Table of the difference in research designs used in the implementation of interventional programs and teaching strategies in the field of executive functions associated with the frontal lobe of the cerebral

cortex in Arab psychological and educational research, where the most used research designs in those studies and research were the design of the experimental group and the control group by a percentage of (82.72%) and by (67) research, where the group is trained, where the group is trained Experimental on certain activities, training and strategies, and the control group is subject to the traditional method through the usual daily program. Some researchers in this designer were satisfied with a tribal measurement, then the implementation of the intervention program/ strategy and then measuring after, while others discussed the impact of these programs/ strategies through follow -up. Then it was followed in the second place in the design of one experimental group by a percentage of (17.28%) and by (14) research, and the researchers were satisfied with this design with a tribal measurement, then the implementation of the intervention program/ strategy and then a dimension. Arab psychological and educational research, these designs have been distributed randomly to the study groups, before the type of treatment is determined for each group, which indicates a great deal of parity between the study groups. In addition to the fact that these research designs were verified as homogeneity between groups in the variable or the related variables, and intermediate and exotic variables such as intelligence, social-economic level, age, ... etc .and to answer the eleventh question of the study, which is" **what is the reality of Arab research in the field of executive functions in terms of the size of the sample?** " Studies and research have been examined and classified according to the size of the research sample to three levels: a small size (less than 30 individuals), average volume (from 30 - 100



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individuals), and a large size (more than 100 individuals), the results were the following table:

Table 12: Studies Classification and Research according to the sample size in research

Percentage %	Iteration	The size of the sample in the search
%66.67	76	Small size (less than 30 individuals)
%31.58	36	Average size(from 30 - 100 individuals)
%1.75	2	Large size (more than 100 individuals)
%100	114	total

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from schedule (12) that the largest number of studies and research in the field of executive functions associated with the frontal lobe of the cerebral cortex was made on small samples (less than 30 individuals) by a percentage of (66.67%) and by (76) research, followed by studies and research that took place on samples of medium size (from 30 - 100 individuals) by a percentage of (31.58%) and by (36) research, and finally Studies and research that took place on significant samples (more than 100 individuals) came by a percentage of (1.75%) and only two research .

To answer the twelfth question of the study, which is **'What is the reality of Arab research in the field of**

executive functions in terms of methods and statistical tests used?' Studies and research were examined and classified according to the statistical tests used to six statistical tests, as the results were as the following table :

Table 13: Classification of studies and research according to the statistical methods and tests used

Percentage %	Iteration	Statistical methods and tests used
%10.53	12	Test 'T' to indicate the differences between the average
%5.26	6	Correction laboratory
%58.77	67	Man-Whitney
%12.28	14	Wilcoxon
%9.65	11	Steel analysis
%3.51	4	Path Analysis
%100	114	the total

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from Table (13) that a percentage of (58.77%) of Arab studies and research in the field of executive functions associated with the frontal lobe of the cerebral cortex and by (67) research used was used by the Man-Whitney Labarrami test, followed by studies and research that used the Wilcoxon LaBarmeteriteri test by a percentage of (12.28%) and at (14) research, then studies, then studies, then studies, then studies, then studies Research that used the 'T 'test to indicate the differences between the mathematical averages of groups or measurements by a percentage of (10.53%) and



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by (12) research, followed by studies and research that used the slope analysis by a percentage of (9.65%) and by (11) research, then studies and research that used the correlation coefficient by a percentage of (5.26%) and at (6) Research, and finally came studies and research that used advanced statistical tests, including a percentage analysis of the path by (3.51%) and (4) research .

To answer the thirteenth question of the study, which is "What are the most used intervention programs and strategies that are most used in developing and improving executive functions in Arab research?" Studies and research have been examined and classified according to the various interventional training strategies and activities used to develop and improve executive functions into two parts: (cognitive intervention, interference through teaching strategies), the results were as the following table:

Table 14: Interventional programs and teaching strategies most used in developing and improving executive functions associated with the frontal lobe of the cerebral cortex in Arabic research

Percentage %	Research number	The type of intervention
%74.07	60	Cognitive intervention
%25.93	21	Intervention through teaching strategies
%100	81	Total

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from the schedule of (14) the diversity of interventional programs and teaching strategies used in the development and improvement of executive functions associated with the frontal lobe of the cerebral cortex in Arab research between cognitive intervention strategies, and teaching intervention strategies, where the most used interventional strategies were cognitive intervention programs by (74.07%) and by (60) research, followed by teaching strategies by a rate (25.93%), with (21) research despite its importance, in the total number of studies and research, which reached (81) research.

To answer the fourteenth question of the study, which is 'What is the size of the impact of interventional programs and teaching strategies in developing and improving executive functions in Arab research?' " Studies and research that dealt with interventional programs and teaching strategies were examined to develop and improve executive functions. It is noticed that a few of them were concerned with calculating the size of the effect and that all these studies did not address the calculation of the effect of the effect and only only the levels of the statistical indication of the test used, and by calculating the size of the effect, the results were indicated in the following table:



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Table 15: The size of the impact of interventional programs and teaching strategies used in the development and improvement of executive functions associated with the frontal lobe of the cerebral cortex in Arabic research

The size of the effect	Statistical value	Sample Size		The size of the effect	Statistical value	Sample Size		The size of the effect	Statistical value	Sample Size	
0.370	36.940	64	55	0.702	11.610	55	28	0.921	21.051	40	1
0.495	5.945	38	56	0.483	2.981	42	29	0.573	3.880	21	2
3.405	26.201	30	57	0.970	47.901	62	30	0.796	14.520	101	3
2.040	9.390	86	58	0.926	13.291	30	31	0.807	10.84	30	4
0.830	3.620	40	59	5.604	16.322	35	32	0.540	3.85	14	5
0.631	9.954	60	60	0.218	2.801	29	33	1.980	7.270	56	6
1.170	16.054	45	61	0.530	3.921	20	34	0.151	40	40	7
0.890	15.110	25	62	0.862	5.732	22	35	0.590	4.701	18	8
1.265	00	20	63	0.103	0.771	21	36	0.995	24.907	23	9
0.437	8.550	26	64	0.402	3.241	25	37	4.501	28.187	20	10
1.684	17.387	58	65	0.807	10.84	30	38	0.742	5.845	27	11
0.786	5.740	22	66	0.771	121.587	16	39	0.948	15.031	19	12
0.910	16.904	64	67	1.980	7.270	13	40	0.389	3.193	60	13
0.671	3.806	20	68	0.015	0.883	66	41	1.003	60.012	19	14
0.975	29.135	27	69	0.584	4.702	14	42	0.930	1460.28	31	15
0.915	11.225	30	70	0.901	11.610	29	43	0.622	4.230	23	16
2.274	17.997	29	71	0.621	11.351	28	44	0.998	65.258	24	17
0.917	23.658	25	72	5.938	22.182	56	45	0.846	5	12	18
6.965	83	58	73	0.470	3.604	60	46	0.926	13.291	30	19
0.796	14.520	60	74	0.920	19.658	35	47	0.849	4.958	12	20
1.258	00	22	75	0.970	47.901	62	48	0.540	3.85	14	21
0.668	3.617	18	76	0.914	7.941	70	49	1.814	8.103	24	22
0.923	19.617	28	77	5.604	16.322	29	50	1.438	6.930	59	23
0.590	4.701	18	78	1.439	7.328	108	51	0.862	4.703	16	24
0.671	3.806	20	79	0.530	3.921	20	52	0.739	00	29	25
0.901	11.610	29	80	0.802	4.592	24	53	0.573	10.880	21	26
0.802	4.592	24	81	0.863	3.827	20	54	0.991	44.740	31	27

classification	Percentage %	Research number	The size of the effect
low	%13.58	11	0 - Less than 0.50
Medium	%35.80	29	0.50 - less than 0.85
Large	%50.62	41	More than 0.85
	%100	81	total

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from Table (16) that there are different impact sizes between the weak and the large of the intervention programs and teaching strategies used in the development and improvement of executive functions in Arab research, where the number of studies and researches that achieved a low impact size (from zero - less than 0.50) reached (11) researches with a percentage of (13.58%), while the number of studies and researches that achieved a medium impact size (from 0.50 - less than 0.85) reached (29) with a percentage of (35.80%), and similarly, the number of studies and researches reached (35.80%). which achieved a large impact size (greater than 0.85) (41) researches also with a percentage of (50.62%) of the total number of studies and researches, which amounted to (81) researches.

In order to answer the fifteenth question of the study, which is **'Does the magnitude of the impact of intervention programs and teaching strategies on the development and improvement of executive functions in Arab research differ according to the educational stage?'**

Table 17: Impact Size by Educational Stage



<i>Average Impact Size</i>	<i>Research number</i>	<i>Educational Stage</i>
1.361	11	Kindergarten
1.469	46	Primary
1.173	10	Preparatory 'Intermediate'
1.099	6	Secondary
0.879	8	University
-	-	Postgraduate Studies
1.196	81	<i>Total</i>

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from Table (17) that the highest average impact size was for intervention programs and teaching strategies used in developing and improving executive functions that were applied to samples in the primary stage with an average effect size of (1.469), followed by intervention programs and teaching strategies that were applied to samples in the kindergarten stage with an average effect size of (1.361), then intervention programs and teaching strategies that were applied to samples in the preparatory stage with an average effect size of (1.173), then intervention programs and teaching strategies that were applied to samples in the preparatory stage with an average effect size of (1.173), then intervention programs and teaching strategies that were applied to a sample in the secondary stage with an average effect size (1.099), then the intervention programs and teaching strategies that were

applied to undergraduate samples came in the last place with an average effect size of $.0879$

In general, it can be said that the size of the impact of the studies and researches applied at the different educational stages is within the limits of the great impact, which achieves the availability of the basic axioms for the construction of psychological intervention programs, which were referred to by Al-Derini and Kamel (2006, 405-406) as follows:

1. The program seeks to help the participants 'as individuals' to change their behavior in a certain direction that achieves individual growth for each of them.
2. The program should be designed and implemented on the basis of individual differences between the participants.
3. The program should have a theoretical basis (theory, scientific hypothesis, ... etc.) justifies its construction, directs its procedures, and guides its implementation and evaluation.
4. The focus of the program should not be on the type of information that brings about change, but rather on the process of change itself, to which information and expertise contribute.
5. The experiences included in the program should be related to the learning process.
6. The intervention program should include both short-term and long-term activities.

From the above, it can be said that the magnitude of the impact of interventional programs and teaching strategies used in developing and improving executive functions



related to the prefrontal lobe of the cerebral cortex does not differ in Arab research according to the educational stage.

In order to answer the sixteenth question of the study, which is '**Does the magnitude of the impact of intervention programs and teaching strategies on the development and improvement of executive functions in Arab research differ according to the gender of the examinee?**'

Table 18: Effect size by sex (male, female, male and female together)

<i>Average Impact Size</i>	<i>Research number</i>	<i>Gender of the examined</i>
0.869	12	<i>male</i>
0.877	8	<i>female</i>
0.951	61	<i>males and females together</i>
0.899	81	<i>total</i>

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from Table (18) that the highest average effect size was for interventional programs and teaching strategies to develop and improve executive functions that were applied to both male and female samples with an average effect size of (0.951), followed by interventional programs and teaching strategies that were applied to female samples only with an average effect size of (0.877), then the intervention programs and teaching strategies that were applied to male samples only came in the last place with an average effect size of (0.869). In general, it can be said that the effect size of the intervention programs and teaching

strategies used in developing and improving the executive functions related to the prefrontal cortex in the training participants, whether they are male, female, male and female, is a large effect size, as its value ranged between (0.869 - 0.951). Therefore, the effect of interventional programs and teaching strategies used in developing and improving executive functions related to the prefrontal lobe of the cerebral cortex in Arab psychological and educational research does not vary according to the gender of the examinee.

In order to answer the seventeenth question of the study, which is **'Does the magnitude of the impact of intervention programs and teaching strategies on the development and improvement of executive functions in Arab research differ according to the study samples?'** the size of the effect was calculated for each sample separately, and the results were as shown in the following table:

Table 19: Effect size according to research samples conducted



<i>Average Impact Size</i>	<i>Research number</i>	Research Samples
0.874	14	Normal Individuals
1.772	31	Individuals with Learning Disabilities
1.213	10	Mentally Gifted Individuals with Learning Disabilities
0.885	15	Individuals with ADHD
0.890	8	Individuals with Intellectual Disabilities
0.867	2	Visually Impaired Individuals
0.879	1	Hearing-Impaired Individuals 'Deaf'
1.054	81	Total

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from Table (19) that the highest average effect size was for interventional programs and teaching strategies applied to individuals with learning disabilities with an average effect size of (1.772), followed by programs/strategies applied to mentally gifted individuals with learning disabilities with an average effect size of (1.213), then programs/strategies applied to individuals with mental disabilities with an average effect size of (0.890), followed by programs/strategies applied to individuals with ADHD with an average effect size of (0.885), followed by Programs/strategies applied to hearing-impaired individuals with an average effect size (0.879), then programs/strategies applied to ordinary individuals with an

average effect size (0.874), followed by interventional programs and teaching strategies applied to visually impaired individuals with an average effect size (0.867). Therefore, the effect of interventional programs and teaching strategies used in developing and improving executive functions related to the prefrontal lobe of the cerebral cortex in Arab psychological and educational research does not vary according to the study samples.

In order to answer the eighteenth question of the study, which is **'Does the size of the impact of intervention programs and teaching strategies on the development and improvement of executive functions in Arab research differ according to the sample size'?**

Table 20: Impact size according to sample size

<i>Average Impact Size</i>	<i>Research number</i>	<i>The sample size</i>
1.632	46	<i>small (less than 30 individuals)</i>
0.993	33	<i>average (from 30 - 100 individuals)</i>
0.896	2	<i>large (more than 100 individuals)</i>
1.173	81	<i>total</i>

Source: Prepared by researchers based on the outputs of the EXCEL program

It is clear from Table (20) that the highest average effect size was for interventional programs and teaching strategies that have been applied to small samples with an average effect of effect (1.632), followed by interventional programs



and teaching strategies that have been applied on medium samples with an average effect of effect (0.993), then came in the last rank interventional programs and teaching strategies that have been applied to large samples in the average The effect of effect (0.896). Hence, the size of the impact of interventional programs and teaching strategies used in the development and improvement of executive functions associated with the frontal lobe of the cerebral cortex in Arab psychological and educational research is not different according to the size of the sample. Knowledge was incomplete, so what was known and reached about the executive functions associated with the frontal lobe of the cerebral cortex should not be ignored, as many researchers emphasized that interventional programs and teaching strategies based on executive functions have proven effective with learners, whether they are ordinary or with special needs alike, taking into account the individual differences between them when designing education.

Educational recommendations and research proposals

In light of the results reached, a set of recommendations and proposals can lead to enriching Arab psychological and educational research in the field of cognitive nervous psychology in general and in the executive functions associated with the frontal lobe of the cerebral cortex in particular, and opens the way to conducting more dimensional research research that deals with a larger number of studies and research and more variables Various to expand the research circle to determine accurate and sound decisions, whose effects are reflected in the academic, emotional and social aspects of individuals in their various

categories and all educational levels, and from those recommendations and proposals the following:

1. Establish a database for executive job research related to the frontal lobe of the cerebral cortex at the level of the departments of the colleges of education, literature, humanities and social sciences, and special education colleges Disability and qualification sciences and sciences with special needs in Arab universities.
2. It is necessary to pay attention to advanced statistics through the use of advanced statistical tests and standards such as multi -variable analysis, global analysis, and pathway analysis.
3. The necessity of paying attention to using the size of the effect or the practical indication in conjunction with the statistical indication when analyzing the data of the executive functionality research related to the frontal lobe of the cerebral cortex, and not being satisfied with the statistical connotation only when testing the assumptions or scientific assumptions in order to take the decision towards adopting the results of this research or not.
4. In the future Arab universities in the study of study in the fields of cognitive nervous psychology; And attention to conducting research to study it in different Arab cultures.
5. The necessity of emphasizing the status of controlled standards agreed to choose and exclude research to conduct beyond the analysis in order to unify and objectively the source of judgment on it.



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