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Abdulrahman Ali Bedaiwy¹
Al-Hanouf Jazaa Muhammad
Al-Anzi²

Primary School Teachers' Perceptions of the Differences in Executive Brain Functions for People with Learning Disabilities in Light of their Difficulty Pattern

Abstract

The study aimed to reveal the perceptions of primary school teachers of the differences in the executive brain functions (EBFs) of their students with learning disabilities (LDs) of both genders, in light of their difficulty pattern (reading and mathematics). The sample of study was (273) male and female students with LDs in the primary stage in the East and West of Dammam city, including (129) male and (144) female students are followed up by (35) male and female teachers with LDs, with (17) male and (18) female teachers of LDs. The study used the descriptive approach by applying a questionnaire to measure the EBFs from preparing researchers. The results revealed that the level of the EBFs of those with LDs in the primary stage in east and west of Dammam was "medium", with statistically significant differences at the level of significance ($\alpha = 0.05$) between the two arithmetic means (AMs) and EBFs in people with LDs that attributed to the learning difficulty pattern. The EBFs of those with reading difficulties showed a greater level than those with math LDs, and there were no statistically significant differences at the level of significance ($\alpha = 0.05$) between the two AMs attributable to the brain functions of the gendered ones.

Keywords: Executive Brain Functions (EBFs), Learning Disabilities (LDs), Reading Difficulties, Mathematics Difficulties, Teachers with LDs, Primary School.

Introduction to the Study Problem

EBFs are, among the higher levels of knowledge, essential for academic achievement and for controlling complex human behaviors. They called EBFs, because they play a leadership role in the brain, and is the core of the development process, on which most behaviors depend from childhood, until the achievement of long-term goals (Gates, 2009).

They are also an administrative system concerned with the implementation of multiple cognitive processes; to achieve long-term goals that have important implications for the learning process and academic achievement. Their necessity lay in the fact that they transmit and

organize ideas and behaviors, which is useful in planning and forming ideas, controlling emotions, and abstract thinking (Malika, 1989).

Most students with LDs lack many executive functions within the classroom, which results in the emergence of academic LDs such as reading and math difficulties, which results in them facing many obstacles with the normal curriculum related to their organization of information, and related to their low knowledge of basic information, as well as disruption their behavior while dealing with different learning situations (Lerner, 2000). Actually, they need a lot of training so that they can understand abstract ideas, so, interest appeared in teaching

Abdulrahman Ali Bedaiwy¹, Special Education Department, College of Education, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia. Email: aabediwi@iau.edu.sa
Al-Hanouf Jazaa Muhammad Al-Anzi², Master of Special Education in Learning Disabilities, Saudi Arabia.
Email: hanoof1412m@gmail.com

them metacognitive strategies, which include the strategies necessary for academic education, such as planning and tracking the completion of tasks, feedback, and flexibility in thinking (Al-Shakhs, Garhi, 2011). The study of (Cox, 2013; Geary, et al, 2008) pointed to the importance of EBFs in teaching people with LDs, they contribute positively to reducing the cognitive difficulty in school performance (Sesma et al, 2009). Study's importance stems from its development of a tool that helps researchers determine the level of EBFs that contribute to increasing teachers' awareness and understanding of EBFs of people with LDs. Therefore, the study sought to reveal the perceptions of primary school teachers of the differences in EBFs of their students with LDs of both genders, in light of their difficulty pattern (reading, mathematics), by answering the following question:

- What are the perceptions of primary school teachers of differences in EBFs of people with LDs according to their gender and type of difficulty?

Theoretical Literature & Previous Studies

EBFs are the link between what is mental, cognitive, and what is external behaviour. They organize, plan, and control the neural connections in the brain and between all its interconnected parts, with the aim of harmonizing and adapting the individual to his environment. However, the importance and necessity of executive functions in cognitive and school psychology have begun since the 1970s of the last centuries. EBFs indicate that it is a managerial concept, which performs the manager's task in following up and monitoring all departments, to reach the desired goal effectively (Baddeley, 1997).

EBFs are represented in the learner's ability to control undesirable behavior and organize it to achieve the goal through cognitive functions, such as attention and memory (Al-Shakhs; Fathi, 2013). EBFs allow the performance of a specific task and define the intended goal and the procedures for their implementation. (Panerai. et al. 2014) defined EBFs as higher cognitive activities, which are regulated by the frontal lobe in the brain. EBFs explain through multiple cognitive models, as Loria indicated that there is a relationship between defects in the frontal lobes of the brain, problem-solving behavior, describing their components with anticipation, understanding consequences, planning, organizing, implementing, flexibility, maintaining direction, self-monitoring, emotional control, and recognizing errors (Purdy, 2011). Dinkala also saw the connection of executive functions with three theoretical frameworks that include (i) executive functions, (ii) the frontal formation, and

(iii) the need to identify behavioral manifestations (Darwish, 2004). Whereas (Norman & Chalis, 1980) indicated that learners are able to perceive a huge amount of activities without paying attention in an automatic way and that new or dangerous situations require voluntary attention control (Noel, censabella, 2007).

With regard to the dimensions of EBFs on which the researchers relied in building their research tool lies in:

- Cognitive Flexibility, which is described as the ability to diversify between multiple strategies in response to changing tasks (Schwaighofer, 2017);
- Working Memory, which is the learner's ability to retain verbal or executive information in the mind for a short period of time, with the aim of completing the task at hand (Al-Shakhs, 2014);
- Planning as indicated in (Al-Adl, 2016) is the ability to complete the specific task requirements, through a set of steps, represented in setting the goal, choosing the most efficient method, identifying the important tools before completing the task.
- Initiation as indicated in (Al-Khawaja, 2016) means the ability on independently embarking on a task, generating ideas, and finding methods for solving problems, this job is important in stopping distractions.
- Emotional Control was defined by (Al-Adl, 2016) as the ability to control inappropriate emotional responses, face sudden situations by controlling feelings and actions, and organize tools, as indicated by (Loveall et al., 2017) represented in the ability to organize and arrange the classroom environment, and maintain orderly.
- Continuity of Focus represented in the learner's ability to select auditory, visual, and tactile stimuli that are closely related to the topic from a wide range of diverse stimuli and sensations.

With regard to the relationship of EBFs with LDs, the term 'LDs' refers to learning disorders represented in the problem of employing academic skills, in reading, reading comprehension, spelling, written expression, numbers and mathematical facts, compared to the chronological age of the learner (American Psychiatric Association, 2013). Students with LDs are affected by the lack of executive functions of their brain, which leads to their shallow thinking and difficulty in forming ideas fluently, in addition to a shift in behavior and personality (Sohlberg & Mateer, 2001). EBFs of people with LDs are linked to the frontal lobes of the brain, as the lack of these functions among them leads to their poor ability to plan (Zureikat, 2005), and their deductive thinking and their

inability to remember the multiple details of working memory as well as their weakness (Gathercole, et al, 2008), and their emotional control is disturbed, so they show impulsive behavior, and they cannot estimate or classify things before doing them (Pennington & Ozonoff, 1996). (Diamond & Ling, 2016) indicated that people with LDs suffer from a lack of flexibility and adaptation. (Huizinga et al, 2006) asserted that people with LDs have a deficiency in the ability to retain and keep information in working memory, processing information and using it to produce new responses, and implement the task to be accomplished. Also, people with LDs face shortcomings in starting a task or activity in a timely manner, as many students with LDs know the correct answer, yet they do not raise their hands and prefer silence, this is as a result of their lack of initiation (Hindawi, 2007). Moreover, they face difficulty in setting a sequential arrangement of the required activities, in sequential and proportional steps, in addition to their suffering from the difficulty of continuing to focus on a particular stimulus for a specific period, due to their inability to choose that stimulus (Kamel, 1990).

EBFs of people with LDs were targeted through several studies and research. The study of (Hashem & Sharitt, 2017) sought to identify the executive functions of people with writing difficulties, and the results showed that there were no statistically significant differences in the executive functions of those from the teachers' point of view and parents. Thus, the most prominent difficulties in writing from the teachers' point of view are the learner's inability to remember the names and shapes of letters (memory and remembrance), and focus attention for a long time. While the study (Junaidi, 2017) investigated the relationship between executive functions, achievement motivation and academic achievement, and the results showed the existence of a statistically significant correlation between executive functions and academic achievement among students with LDs, and a statistically significant correlation between executive functions and achievement motivation among those with LDs. The results also showed the possibility of predicting the academic achievement and achievement motivation of people with LDs through knowledge of their executive functions. The study of (Morsi, 2018) sought to identify the most important deficiencies in executive functions associated and predictive of LDs in the fields of reading and math. The results showed that three executive functions (working memory, planning, and organizing tools), respectively, are the most important functions that can predict reading difficulties, and working memory and responding, respectively, are the most important functions that can predict

mathematics LDs. The results also showed a positive correlation between the mathematics LDs and the lack of other executive functions. A study of (Khalil, 2018) explored the differences in the dimensions of executive functions between students with LDs, those with underachievement, and the ordinary ones in the preparatory stage. The results showed that there were statistically significant differences in executive functions between LDs and ordinary people in favor of those with LDs, and that the two dimensions of restraint and organization of tools are the two executive functions most capable of distinguishing between normal students and those with LDs. The study of (Meiri, Lenvinson, Horowitz-Kraus, 2019) investigated the role of executive functions in reading and mathematics among people with reading difficulties and their normal counterparts. The results showed that the performance of people with reading and mathematics difficulties was low compared to normal students. (Kapa & Erikson, 2020) studied the performance of executive functions and word learning among people with developmental language disorder and normal ones. The results showed that the performance of people with language disorders was inferior to the performance of ordinary ones. The study of (Nouwens, Groen, Kleemans, & Verhoeven, 2021) examined the direct and indirect effects of executive functions (working memory, inhibition, and planning) on reading comprehension. The results showed direct effects on working memory and planning influence reading comprehension, as well as indirect effects of working memory and inhibition of word decoding.

Approach, Sample & Tools

The study used the descriptive approach; on a sample of (273) male and female students with LDs in government primary schools in Dammam (east & west), who are followed by (35) male and female teachers of LDs in (26) schools in east and west of Dammam. EBFs scale for people with LDs, prepared by the researchers, was applied by referring to the theoretical frameworks and related measures, consisting of seven dimensions: working memory, emotional control, attention retention, initiation, planning/prioritization, organization, and cognitive flexibility. The final form contains (42) items in which answered in a 5-point Likert scale [always (5), often (4), sometimes (3), rarely (2), never (1)]. The raw scores on the scale as a whole range between (42-210). The higher the raw score on the scale, the indicator indicates for the increase in EBFs of people with LDs, and vice versa. For the purposes of evaluating the degree of effectiveness of EBFs in people with LDs from the point of view of their teachers, the statistical model with relative staging was

adopted in order to classify the AMs of the responses of male and female teachers on the scale of EBFs, its items and dimensions into three degrees of effectiveness as follows: *High* (it is given to those with a score greater than (3.66)), *Medium* (it is given to those with a score ranging from (2.34: 3.66)), and *Low* (it is given to those with a score less than (2.34)). The psychometric properties of the scale were verified. At the level of validity, the researchers presented the scale to a number of arbitrators, where the arbitrators' agreement rates on the scale's items ranged between (82%-100%), which are acceptable values. For that all the arbitrators' agreed observations were taken at (80%), and thus the number of items of the scale in its final form after arbitration consists of forty-two items distributed over seven dimensions, namely, working memory (it has 6

items), emotional control (it has 8 items), the continuity of focus (it has 6 items), initiation (it has 5 items), planning; (it has 5 items), organization (it has 6 items), and cognitive flexibility (it has 6 items). The internal consistency was calculated by applying the scale to an exploratory sample (4) teachers who responded to (15) male and female students with LDs, and the values of the Pearson correlation coefficients between the items of the scale and dimensions ranged between (0.94-0.59), and ranged between dimensions and the total score (0.87-0.49), and the values of the corrected correlation coefficients ranged between the items of the scale of EBFs and dimensions between (0.87-0.51), and between dimensions and the total score between (0.81-0.48), and the following table shows the values of the correlation coefficients.

Table 1.

Shows Values of Pearson Correlation Coefficients for Relationship of Items with their Sub-Dimensions & Total Score

Dimension & Item No.	Items of EBFs People with LDs according to the Dimension belonging to it	Item correlation with	
		Dimension	Scale
Working Memory			
1	Remembering the instructions, which received after 5 minutes.	0.87*	0.79*
2	Remembering daily homework in reading or math.	0.76*	0.69*
3	Remembering required books according to the school schedule.	0.80*	0.65*
4	Good at memorizing with very few errors when memorizing.	0.87*	0.79*
5	Delivering assignments on time.	0.83*	0.81*
6	Answering questions about the details of the text as soon as reads it.	0.83*	0.73*
Emotional Control			
7	Adapting to the new situations that are encountered.	0.91*	0.82*
8	Adjusting to feeling calm after school break.	0.84*	0.83*
9	Reaction is not exaggerated when it is exposed to undesirable situation.	0.59*	0.58*
10	Feelings are positive towards depressing situations.	0.91*	0.82*
11	Asking for help from the teacher without hesitation.	0.79*	0.67*
12	Asking to play with friend without hesitation.	0.85*	0.75*
13	Accepting criticism directed by others.	0.70*	0.61*
14	Ability of self-control when one of friends causes annoyance.	0.71*	0.58*
Continuity of Focus			
15	Able to complete a task within a period of (15) minutes because of capacity.	0.75*	0.73*
16	Ability to engage in a task within a period of (15) minutes.	0.75*	0.73*
17	Needing a rest while executing the task within a period of time that takes (30) minutes.	0.78*	0.71*
18	Taking a period of 20-30 minutes to complete the worksheets.	0.84*	0.80*
19	Performing one of the simple tasks previously trained on within a period of time that takes (5) minutes.	0.63*	0.51*
20	Listening to a lesson consisting of several axes within a period of time of (40) minutes.	0.78*	0.71*
Initiation			
21	Initiating the implementation of the instructions given by the teacher as soon as hearing them	0.87*	0.84*
22	Committing to implement the homework schedule previously prepared	0.91*	0.80*
23	Beginning to perform the required tasks on time.	0.88*	0.87*
24	Completing 3 to 4 previously trained tasks.	0.85*	0.71*
25	Completing the task assigned by the teacher before moving on to another activity during the lesson.	0.89*	0.83*
Planning			
26	Following the teacher's plan to get the task done.	0.82*	0.81*
27	Planning to carry out an activity that consists of 2 to 3 steps of design.	0.80*	0.53*
28	Planning to do an internet search for something that causes interest.	0.83*	0.76*
29	Making plans to do an activity with friend during the lesson when the teacher makes questions.	0.63*	0.57*
30	Making plans for extra-curricular activities (e.g. crafts, drawing)	0.80*	0.53*
Organization			
31	Committed on time for reading or math class in the resource room.	0.76*	0.49*
32	Preparing the papers required for the lesson.	0.94*	0.71*
33	Committed to the school queue in the morning.	0.80*	0.49*
34	Keeping the place in the classroom tidy.	0.89*	0.82*
35	Arranging things to be brought home from school, such as study materials or homework.	0.78*	0.77*
36	Arranging appointments to carry out chores and activities according to the time specified by the teacher	0.73*	0.65*
Cognitive Flexibility			
37	Modifying the behavior in light of understanding of the friends' reactions.	0.79*	0.78*
38	Having enough flexibility to share games with friends.	0.77*	0.69*
39	Accepting being redirected by teachers.	0.80*	0.79*
40	Adapting to change in daily plans.	0.86*	0.80*
41	Adapting to friends, who are different in the classroom.	0.90*	0.71*
42	Abiding by all of the classroom (regulations, instructions, and rules) of all kinds.	0.85*	0.82*

*Statistically significant ($\alpha = 0.05$).

The concomitant validity (verbal) of the scale was also calculated with the executive functions' growth scale (Al-Shakhs, Hussain, Nawar, & Nour Al-Din, 2020); as it ranged

between (0.82: 0.99) for dimensions and total score, and came as they are in the following table:

Table 2.

Shows Values of Pearson's Correlation Coefficients Between the EBFs Scale & Executive Functions Growth Scale

Relationship Between the Two Scales		Pearson Correlation Coefficient (Concomitant convergent Validity)
Currently	Inherent	
Working Memory	Working Memory	0.92*
Emotional Control	Emotional Control	0.84*
Continuity of Focus	Attention Retention	0.87*
Initiation	Initiation	0.88*
Planning	Planning/ Prioritizing	0.82*
Organization	Organization	0.72*
Cognitive Flexibility	Cognitive Flexibility	0.94*
Total Scale	Total Scale	0.99*
* Statistically significant ($\alpha = 0.05$).		

To calculate the scale's reliability, Cronbach's alpha equation was used by applying to the rationing sample, where the correlation coefficients between the first and second application were calculated, which amounted to (0.98), and for the dimensions ranged between (0.81-0.91). The reliability coefficients were according to Pearson's correlation coefficient (0.98), and the dimensions ranged between (0.95-0.98). And the reliability of the frequency between the first and second applications on the members of the exploratory sample according to the inter-correlations of their EBFs has reached its value (0.74), and its dimensions ranged between (0.70-0.84). It is noted from the above-mentioned values of frequency reliability according to the two methods (Pearson correlation coefficient, inter-correlation coefficients) of the relationship between the first and second applications of EBFs and their dependent dimensions, did not fall below the standard for the lowest acceptable critical value of Pearson's correlation coefficient of (0.4776) at the degree of freedom (13) and the level of significance ($\alpha = 0.05$) calculated according to the test (t) for the null hypothesis of the Pearson correlation coefficient. This indicates the achievement of the reliability indicator (frequency reliability) as one of the convergent validity indicators that measure the same characteristic on the different degree of effectiveness of EBFs among people with LDs from the point of view of their teachers; this reflects the liberation of the study tool from some kind of extraneous factors that affect internal validity according to the method of inter-correlation coefficients - at least -

between the first and second applications of EBFs for people with LDs from the point of view of their teachers. In addition to its reliability coefficients have also been verified for each age stage, as follows: in the age group between (6-9) years and age group between (9-12) years, the values of Pearson's correlation coefficients were calculated; for the relationship of the items of the executive functions scale with its dependent dimensions, which ranged between (0.74-0.30) and (0.91-0.26) respectively, and the values of Pearson's inter-correlation coefficients for the dimensions of the scale were calculated where it ranged between (0.545-0.834) and (0.68-0.91) respectively. The reliability was also calculated by Cronbach's alpha method for each dimension of the scale where it ranged between (0.744-0.826) and (0.72-0.90) respectively.

Results & their Interpretation

First: The results related to the study question, which states: 'What is the level of EBFs for people with LDs in governmental primary schools in Dammam (east & west) from a teacher's point of view?'

To answer this question, the calculation of Arithmetic means (AMs) and standard deviations (SDs) of frequencies and percentages were calculated within each degree of effectiveness of EBFs (working memory, emotional control, continuity of focus, initiation, planning, organization, and cognitive flexibility) among people with LDs, as shown in the following table.

Table 3.

AMs, (SDs), Frequencies, and Percentages within each Degree of Effectiveness of the Dimensions of EBFs for People with LDs in Primary Governmental Schools in Dammam (East & West)

EBFs, its dimensions, its ranks and level of its effectiveness [†]		Frequency	Percentage	AM	SD	General Degree of Effectiveness*
Initiation						
1	Low	75	27.5%	3.12	1.16	Medium
	Medium	92	33.7%			
	High	106	38.8%			
Organization						
2	Low	113	41.4%	2.77	1.04	Medium
	Medium	92	33.7%			
	High	68	24.9%			
Continuity of Focus						
3	Low	115	42.1%	2.64	0.94	Medium
	Medium	105	38.5%			
	High	53	19.4%			
Cognitive Flexibility						
4	Low	150	54.9%	2.45	1.11	Medium
	Medium	76	27.8%			
	High	47	17.2%			
Emotional Control						
5	Low	155	56.8%	2.28	0.96	Low
	Medium	92	33.7%			
	High	26	9.5%			
Planning						
6	Low	193	70.7%	1.93	1.05	Low
	Medium	57	20.9%			
	High	23	8.4%			
Working Memory						
7	Low	222	81.3%	1.71	0.89	Low
	Medium	34	12.5%			
	High	17	6.2%			
Total Scale						
8	Low	144	52.7%	2.40	0.93	Medium
	Medium	98	35.9%			
	High	31	11.4%			
*The order of the dimensions of EBFs in descending order according to their AMs was taken into account.						
*The classification of the degree of effectiveness of EBFs and their dimensions according to their AMs, as in the method, were taken into account.						

It is noted from table (3) that the level of general effectiveness of EBFs of people with LDs in the governmental primary schools in Dammam (east and west) was 'medium', as degree of reduced effectiveness of EBFs was improved by (52.7%) of those with LDs. The researchers explain this thing, that people with LDs often suffer from defects at different levels in a large number of executive functions, according to what (Darwish, 2014) emphasized that the general cognitive ability of learners is related to the efficiency and effectiveness of their executive functions, so people with LDs differ in those executive functions from others. Therefore, this may be a reason for the academic problems they face, so EBFs are important in the learning

process of people with LDs, This is consistent with what was confirmed by studies of (Junaidi, 2017) and (Meltzer, 2018), where they indicated the importance of executive functions in the learning process, and their relationship to school performance and behavioral characteristics.

With regard to the classification of the dimensions of EBFs of people with LDs from the point of view of their teachers, it came according to the following order: the initiation dimension, it ranked first within the level of general 'medium' effectiveness as the degree of high effectiveness of the dimension improved among (38.8%) of those with LDs. The two researchers explain that initiation dimension is a prerequisite on which the performance of academic tasks depends and is

largely related to the learner's confidence in himself, and in his ability to act successfully in the situations he is exposed to, and this result contradicts the findings of studies (Bradshaw, 2001) and (Hindawi, 2007), as they indicated shortcomings the initiation dimension of people with LDs.

After that, organization dimension came in the second place within the degree of 'medium' general effectiveness. As the degree of low effectiveness of the dimension was improved by (41.4%) of those with LDs. The two researchers explain this by the learners' commitment to attend the school queue in the morning, and the ability to arrange the time to carry out the work according to the time specified by the teacher, and to maintain the order of their place in the classroom, and to come at the specified time for the reading or mathematics class in the resource room. Therefore, its effects appear on daily life skills, academic performance, and social interaction. This result is in consistent with the study of (Miyake & Friedman, 2012), which indicated the importance of organization in forming ideas to do action, which helps to meet and solve problems and requirements of adaptation in learning, which contributes to achieving school success.

Then the continuity of focus dimension came in the third rank within the degree of 'medium' general effectiveness; the lower degree of effectiveness of the dimension improved in (42.1%) of those with LDs. The researcher explains this through the responses of teachers with LDs to the items of the current research tool regarding the continuity of focus that they need rest during the implementation of the task, and they can integrate into the performance of a task within a period of time that takes (15) minutes, and the continuity of focus of students with LDs on a particular stimulus for a period of time required by the task to be accomplished, enables them to resist distraction, as the result differs with the study (Mustafa, 2011), as it indicated a lack of continuity of focus for people with LDs.

Then, cognitive flexibility dimension came in the fourth rank, within the degree of 'medium' general effectiveness. The lower degree of effectiveness of the dimension improved among (54.9%) of those with LDs. The two researchers explain this by having enough flexibility for people with LDs to exchange games with their friends, and the ability to modify their behavior in light of their understanding of their friends' reactions, adapting to changes in daily plans, and adhering to various classroom instructions. This is consistent with what they indicated (2016, Ling & Diamond) that cognitive flexibility is theoretically essential for school readiness more than intelligence coefficients, and it predicts success throughout the school years. It is

consistent with the study of (Khalil, 2018) that there are no statistically significant differences in the dimension of transformation and cognitive flexibility for people with LDs.

After that emotional control dimension came in the fifth rank within a 'low' general effectiveness degree; the lower degree of effectiveness of the dimension improved in (56.8%) of those with LDs. It may indicate their low ability to adapt in new situations they encounter, and their poor ability to control their feelings when they are harassed by their friends, and they do not accept criticism from others. This result is consistent with the study of (Junaidi, 2017), which indicated that there is a statistically significant correlation between executive functions and academic achievement among students with LDs. It also agreed with the study of (Khalil, 2018), which indicated that the dimensions of emotional control and organization of tools are the most executive functions capable of distinguishing between normal students and those with LDs.

Then planning dimension came in the sixth rank within a "low" general effectiveness as the low degree of effectiveness of the dimension improved among (70.7%) of those with LDs. The two researchers explain this that people with LDs tend to lack planning for any task that constitutes their interest, and they suffer from weakness in accomplishing cooperative interactive activities and tasks with their peers within the lessons. In addition to their weakness in following the steps set by the teacher to accomplish the task. This result is in consistent with the study of (Benton, 2001), which indicated that the performance of children with LDs in reading and mathematics is poor, as well as the study of (Zureikat, 2005), which indicated that the weakness in planning results in problems in prioritizing the completion of tasks.

With regard to the working memory dimension, it ranked seventh within a 'low' general effectiveness, as the low degree of effectiveness of the dimension improved among (81.3%) of those with LDs. The two researchers explain that people with LDs tend to have problems in bringing the required books and solving the required homework and delivering them on time in the subjects of reading and mathematics, in addition to their weakness in remembering the instructions and steps they received after a short period of time. This is consistent with what was indicated by (Al-Taher, 2016) study that the working memory of people with LDs is an important component of executive functions and has an effective role in influencing other executive functions, it also is in consistent with the study (Hindawi, 2007) that people with LDs have a significant deficiency in the performance of working memory. In addition to

the study of (Morsi, 2018) agreed with it that working memory is the most important executive function that can predict reading difficulties and difficulties learning mathematics.

Second: The results related to the study question, which states: "Are there statistically significant differences at the significance level ($\alpha = 0.05$) between the AMs of EBFs of people with LDs in governmental primary schools in Dammam (east & west)

attributed to [gender (male, female), and learning difficulty pattern (reading, mathematics)] from the point of view of their teachers?'

To answer this question, the researchers conducted a binary variance analysis - without interaction - between the AMs of EBFs of people with LDs according to gender and the pattern of their learning difficulty from one point of view, according to the following table:

Table 4.

Results of the Binary Variance Analysis -without Interaction- between the AMs of EBFs of People with LDs according to Gender and their Learning Difficulty Pattern from the Point of View of their Teachers

Source of Variance	Sum of Squares	Degree of Freedom	AM of Sum of Squares	F	Possibility of Error
Gender					
	0.59	1	0.59	0.85	0.36
Difficulty Learning Pattern					
	44.09	1	44.09	63.04*	0.00
Error					
	188.84	270	0.70		
Total					
	233.52	272			
*Statistically Significant ($\alpha = 0.05$).					

Table (4) shows that there is no statistically significant difference at the level of significance ($\alpha = 0.05$) between the AMs of EBFs among people with LDs due to the gender of those with disabilities. The two researchers explain that these learners had the same start and learn in the same circumstances, and that they are from the same primary stage. As they have not yet entered the stage of adolescence, which is the stage that witnesses significant differences between the genders, and this result differed with what was indicated by the study (Suleiman, 2010) that females perform better in general memory tasks than males.

It is also clear from Table (4) that there is a statistically significant difference at the level of significance ($\alpha = 0.05$) between the AMs of EBFs of people with LDs due to the pattern of their LDs and their teachers' point of view. The EBFs of those with LDs appear to be more effective than those with LDs in mathematics. The two researchers explain this that the difficulties of learning to read are more, as they represent 80% of the academic difficulties, and since reading is the primary means for all academic inputs, and this result agreed with studies of (Awadallah & Ashour, 2003) that people with LDs work on analyzing the words and symbols in front of them to get an idea or meaning.

Conclusion

The study aimed to reveal the perceptions of primary school teachers of the differences in the EBFs of their students with LDs of both genders, in light of their difficulty pattern (reading, mathematics). The results on the level of EBFs in people with LDs in primary school from their teachers' point of view were 'medium'. The results also showed significant differences in the EBFs of those with LDs due to the learning difficulty pattern. The EBFs of those with reading difficulties are greater than those of those with LDs, and they are not found in the EBFs of those with LDs due to gender. Based on these results, the two researchers recommend that teachers and parents need to monitor and EBFs for people with LDs, and use them as a predictor in diagnosing people with LDs, and to seek other similar studies in which specialists in the fields of special education, neuroscience, and neuropsychology cooperate using various tools between medical and psychological findings so that the results are more accurate and generalizable.

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