

THE INFLUENCE OF METACOGNITIVE AWARENESS SKILLS AND ATTENTION DEFICIT / HYPERACTIVITY DISORDER (ADHD) ON STUDENTS' ACHIEVEMENT

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ABSTRACT

The aim of the study was to investigate the influence of metacognitive awareness skills and Attention Deficit/Hyperactivity Disorder (ADHD) on the general foundation students at their final level at GFP. Forty-nine low achievers participated in the study: 29 males and 20 females. The participants were asked to take the Metacognitive Awareness Inventory (MAI) survey (Schraw, G. & Dennison, R.S, 1994) and ADHD signs or symptoms checklist (National Center on Birth Defects and Developmental Disabilities). MAI survey is divided into two sections: Knowledge about cognition which is about one's own cognitive processes and the understanding of how to regulate those processes to maximize learning, and regulation of cognition which is the regulation of cognition and learning experiences through a set of activities that help control one's own learning. ADHD survey is divided into two sections: Inattention and Hyperactivity / Impulsivity. The study tools used were translated into Arabic and piloted to check the content understanding in Arabic. The results of the study showed that the low achievers used on average 70 % Knowledge about cognition skills and regulation of cognition skills. It also yielded that most low-achievers were having inattention signs, but few were hyperactive, as per The American Psychiatric Association's Diagnostic and Statistical Manual, Fifth edition (DSM-5). The study recommends involving the low-achievers in training activities to raise their metacognition and to decrease their learning attention spans.

KEYWORDS: ADHD, Academic Achievement, Higher Education, Metacognition

INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) has become a common, a lifelong disorder due to changes in lifestyle these days. The American Psychiatric Association reported that the disorder affects 3 % to 7 % of school-aged children and it is the most prevalent neurobehavioral disorder diagnosed in children today [1]; in their electronic literature search of ADHD studies, concluded that in Arab countries there has been an increase in ADHD research in recent years and ADHD rates in Arab populations were similar to those in other cultures [2], [3].

Moreover, evidences from longitudinal studies show that nearly for two-thirds of ADHD children, symptoms continue into late indolence [4], and almost 50 % - 65 % of children continue to experience symptoms of ADHD in their adult years as maintained [5]. Twenty to thirty percent of ADHD children have associated learning problems such as reading, spelling, writing and arithmetic [6]. Adults diagnosed with ADHD as children, only 12% had completed a bachelor's degree or higher, compared with 24% of controls; and only 1% had completed a postgraduate degree, compared with 8 % of controls

[7]. ADHD is a disorder of deregulations of thought and action associated with poor inhibitory control [8]. ADHD individuals experience cognitive deficits (known as well executive deficit) such as cognitive flexibility, fluency and planning and most, if not all, of the cognitive deficits associated with ADHD seem to fall within the realm of self-regulation or executive functions [9].

ADHD and Academic Achievement

ADHD is associated with greater risks for low academic achievement, poor school performance, retention in grade, school suspensions and expulsions, poor peer and family relations, anxiety and depression, aggression, conduct problems and delinquency [9].

It is the symptoms of ADHD and underlying cognitive deficits not comorbid conduct problems that are at the root of academic impairment [10].

Reviewed studies in order to determine the prevalence and symptomatology of ADHD in postsecondary students, to examine its effects on academic achievement, and discuss appropriate management; they concluded that ADHD negatively impacts academic performance in students and increases the likelihood of drug and alcohol problems [11].

Metacognitive and Academic Achievements

Metacognition is the process of thinking about thinking. Metacognition relates to the consciousness one has about own thinking processes and to the ability to have control of those processes [12]. It is the ability to understand, monitor and self-regulate cognition. For learners, it is important to develop metacognition because it can improve the application of knowledge, skills, and character qualities in realms beyond the immediate context in which they were learned [13].

Examining the impact of the Metacognitive Awareness on academic achievement in college students; they found that metacognitive skills could increase the performance of individuals in their courses, and could also increase their academic achievement [14]

The study examined the relationship between metacognitive awareness and academic achievement in Ajman University in the United Arab of Emirates. The sample consists of (75) preservice of Professional Diploma Female Students at Ajman University in UAE. Findings assert the importance of metacognition in learning. It recommends that college professors have to adopt teaching technique and strategies in presenting information to students in a way that encourages the use of metacognitive skills [15].

The result of investigating Metacognitive Awareness and Academic Performance in College Freshmen of their study revealed a significant positive correlation between metacognitive awareness and college freshmen students' academic performance, as indicated by cumulative grade point average (GPA) giving an indication that students with a higher degree of metacognitive awareness tend to also succeed academically when compared to those with a lesser degree of metacognitive awareness [16].

ADHD and Metacognitive Awareness

It is very important to establish a connection between ADHD and cognitive skills. The role of attention is thought to be crucial to the self-regulation of cognition, emotion, and behavior, and while ADHD may be considered a disorder characterized by difficulties in self-regulation, mindful awareness training maybe considered a tool of enhancing

self-regulation [17]. It is assumed that children with ADHD may experience difficulty engaging in a reflexive activity such as metacognition; however, Difference in meta-comprehension performance between ADHD and Control groups are interpreted in terms of «developmental delay» for the children with ADHD rather than in terms of a deficit [12].

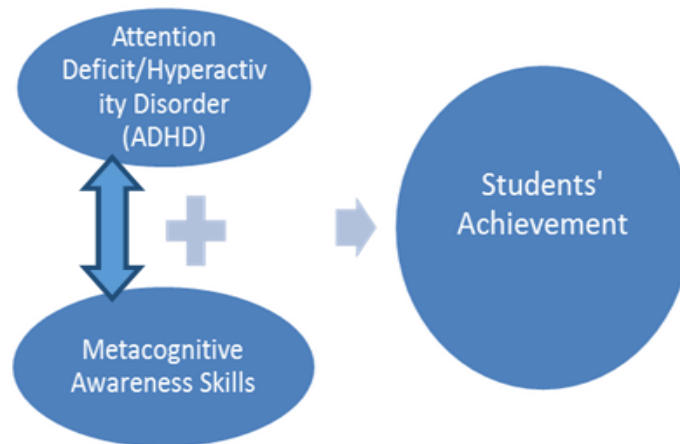


Figure 1: Relationship Between Achievement and ADHD- Metacognitive Awareness.

Context of the Study

Oman, with a population of only two million people, is a small but nonetheless progressive and developing nation in the Middle East. With fossil fuel reserves dwindling in the foreseeable future, the government has decided to strive to attain a knowledge-based economy to reduce dependence on the current resource based economy. By far the biggest factor currently holding us back is the lack of a well-grounded educational system in the country. The public school system in the country has only been in existence for the past forty years. Before that, Oman only had three primary schools.

OBJECTIVE OF THE STUDY

At Sohar University (SU), one of leading private universities in the Sultanate of Oman, little consideration has been paid as regards to the importance of exploring the influences of affecting students' academic achievement as a factor to improve learners' academic performance. Sohar University lower achievers can be identified by the E-Register; nevertheless, without referencing the performance to contributing factors.

There is an important need for research on ADHD in the Arab World, not only to assess the national prevalence in children and adolescents but also to look at the differential burden and treatment of this disorder, which has high levels of mental co morbidities and high impact across the life span [3].

The review of the studies on ADHD and academic impairment concludes with an overview of the literature examining strategies that are directed towards remediating the academic impairment of individuals with ADHD [10].

The objective of this study is to explore the influence of ADHD and Metacognitive Awareness as factors contributing to the General Foundation Program (GFP) students' low achievement at Sohar University.

Study Design and Tools

The study took place in the second semester of the 2018-2019 academic years. Forty-five level-3 GFP low achievers participated in the study: 29 males and 20 females studying Math, IC3 and English. The participants were asked to take the Metacognitive Awareness Inventory (MAI) survey [18] and ADHD signs or symptoms checklist (National Center on Birth Defects and Developmental Disabilities). MAI survey is divided into two sections: Knowledge about cognition which is about one's own cognitive processes and the understanding of how to regulate those processes to maximize learning. This includes declarative knowledge, procedure knowledge and conditional knowledge. Regulation of cognition is the regulation of cognition and learning experiences through a set of activities that help control one's own learning. This includes planning, information management strategies, comprehension monitoring, debugging strategies and evaluation. ADHD survey is divided into two sections: Inattention and Hyperactivity /Impulsivity. The study tools used were translated into Arabic and piloted to check the content understanding in Arabic.

RESULTS OF THE STUDY

- **ADHD and Academic Achievement**

This section shows the relationship between ADHD and the lower achievers. Table 1 shows there are 38 students showing syndromes out of 49 students; almost 77.6 % of the participants can be diagnosed as having inattention syndromes. Table (II) shows that there are 11 students (22.5 %) having hyperactivity syndromes as per the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), which is developed by the American Psychiatric Association. This result concurs with studies which indicate that college students are more commonly diagnosed with symptoms of inattention rather than hyperactivity-impulsivity [19].

The Table 2 shows the study shows that there is significant difference of ADHD between boys and girls: Chi-square yields a p-value of less than .05, as can be seen from table; as can be seen from the table (3) 61 % of inattention student are boys and 39 % are girls.

- **Metacognitive and Academic Achievements**

The Table 4 shows that students use 69.8 % of the overall students' metacognitive skills, 69.7 % of their knowledge about cognition and 70.9 % of regulation of cognition skills. The level of metacognition affects the level achievement'; the higher level of metacognition, the higher academic achievement. It is interesting to notice that planning, evaluation and comprehension monitoring are less used by the students [20].

The study's findings indicated that both metacognitive monitoring and control are good predictors of academic performance in college, while metacognitive knowledge is not [21]. Table (V) shows that the item "I periodically review to help me understand important relationships" in the comprehension category and the "I summarize what I've learned after I finish." In the evaluation category show almost 47% of the students in the study aren't using these skills which are important in cognitive regulation skills [22].

In Table 6 the Chi-square test shows a p-value of greater than .05; there is no significant difference in metacognition between male and female; this result concurs with the study which indicates that gender does not affect the metacognition of college students [20].

Table 1: Inattention Percentage in GPF Students

Inattention	Item Account	Frequency	Percent
Score less than 5	0	1	2
	2	2	4.1
	3	4	8.2
	4	4	8.2
Not Inattention		11	22.5
Scores 5 and more	5	15	30.6
	6	16	32.7
	7	4	8.2
	8	2	4.1
	9	1	2
Inattention Students		38	77.6

Table 2: Hyperactivity Percentage in GPF Students

Hyperactive	Item Account	Frequency	Percent	
Score less than 5	0	1	2	
	1	7	14.3	
	2	8	16.3	
	3	11	22.4	
Not Hyperactive Students	4	8	16.3	
	Not Hyperactive Students		35	71.3
	Scores 5 and more	5	10	20.4
		6	2	4.1
7		2	4.1	
Hyperactive Students		14	28.6	

Table 3 Chi-Square of Inattention Students

Item	Gender	Percentage	Df	Significance
Inattention Students	Male	61 %	1	0.019
	Female	39 %		
Total		100 %		

Table 4: Metacognition of GFP Students

Metacognitive Skills	Percentage
Regulation of Cognition	69.7
Planning	67.3
Evaluation	67.4
Comprehension monitoring	67.6
Information management strategies	71
Debugging strategies	75.1
Knowledge about Cognition	69.8
Procedure knowledge	68.4
Conditional knowledge	70.2
Declarative knowledge	70.9
Overall Metacognitive Skills	69.8

Table 5: Examples of Students' Responses

Comprehension monitoring	Response	Frequency	Percent
I periodically review to help me understand important relationships.	Not Applicable	24	49
	Applicable	25	51
	Total	49	100
Evaluation	Response	Frequency	Percent
I summarize what I've learned after I finish.	Not Applicable	22	44.9
	Applicable	27	55.1
	Total	49	100

Table 6: Chi-square of Metacognition

Responses	Gender		Sign
	Male	Female	
Metacognitive Aware RC	29	20	0.894
Metacognitive Aware KC			0.648

CONCLUSIONS

The study can conclude that there is an influence of inattention syndrome on the student's achievement; most of the low-achievers demonstrate inattention but not hyperactivity syndromes. Inattention signs seem influencing the boys more than girls. Furthermore, the low-achievers are not aware of applying many of their metacognition skills. The study recommends conducting interventive training workshops on metacognition for the low-achievers to maximize the potential of applying more of their metacognition skills which in return help to overcome their inattention problems and improve academic achievement [23], [24].

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