

## **The Moderating Role of Work Engagement in the Relationship of Attention Deficit Hyperactivity Disorder with Employees' Outcomes**

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### **ABSTRACT**

The present study states that work engagement acts as a moderator in the relationship between employees' attention deficit hyperactivity disorder and employees' outcomes in a way that this negative relationship will be weak when work engagement is high. According to this study, ADHD has a negative impact on employees' outcomes i.e., in-role performance, organizational citizenship behavior, and job satisfaction. Work engagement is proposed to be a moderating variable that weakens the negative relationship between ADHD and the proposed employees' outcomes. Primary data has been collected to conduct the study. The population of the study comprises employees from a few public and private institutes of Islamabad, Rawalpindi, and Wah-Cantt (cities of Pakistan), while different banking, manufacturing, education, and service sectors (office work) have been covered. 259 questionnaires out of 300 have been collected due to non-response issues. The variables of the study i.e., employees' ADHD, work engagement, in-role performance, organizational citizenship behavior, and job satisfaction have been measured through a self-report questionnaire. ADHD has been measured by an 18-item adult ADHD self-report scale (ASRS-v1.1) symptom checklist. The data has been analyzed through regression and moderation analyses. The study has been supported by, validates, and stresses the attentional control theory. The study states that ACT helps explain the workplace behavior of people whose capacity to control attention might be affected due to anxiety, ADHD, or certain other impairments. ACT states that people with a deficiency of attentional control (e.g., because of ADHD) exhibit lower performance as compared to employees who do not have this problem. The results of this study support and strengthen the given concepts associated with the attentional control theory. Each one of the nine hypotheses of the study has been supported. The study concluded in the realization that when work engagement of employees with attention deficit hyperactivity disorder increases by providing them with certain additional resources, it weakens the negative relationship between employees' attention deficit hyperactivity disorder and employees' outcomes.

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## **INTRODUCTION**

A cognitive disability named attention deficit hyperactivity disorder (ADHD) has affected millions of people (Halbesleben et al., 2013). Adult ADHD is correlated with considerable functional impairments in several areas of life, including work, home, school, and relationships with others (Hayashi et al., 2019). ADHD is a neurobiological disorder that is usually first identified in childhood and, in around 50% of cases, continues throughout adulthood, according to

many years of studies (Sibley et al., 2022). The majority of adults who were diagnosed with ADHD as children still have these symptoms and/or impairments in their adulthood (Breda et al., 2021; Faraone et al., 2006). Generally, noticeable ADHD symptoms decrease throughout a person's life starting in childhood (Wootton et al., 2022). Engagement is expressed as having surplus resources to allocate to performance (Gorgievski & Hobfoll, 2008; Halbesleben & Wheeler, 2008; Kühnel et al., 2012). According to research, highly engaged employees devote their additional resources to organizational citizenship behavior and in-role performance (Bakker et al., 2008; Halbesleben & Wheeler, 2008; Llorens et al., 2007; Salanova et al., 2005; Salanova et al., 2006). This study proposes that when work engagement is high, it weakens the negative relationship between an employee's ADHD and employee outcomes (in-role performance, organizational citizenship behavior, & job satisfaction).

Working memory, planning, and anticipating issues are common in adults who have ADHD. ADHD symptoms include attention deficiency, hyperactivity, and impulsivity. The inability to perform effectively at work is strongly related to these deficiencies. Because workers with ADHD symptoms find it difficult to follow directions from others, job control may be a significant factor that helps the workers with ADHD symptoms to work effectively at their workplace. Job control and social support are impactful aspects aligned with psychological suffering in association with ADHD symptoms (Nagata et al., 2019). It is hard for the people with ADHD to attain and sustain a job. As this is difficult for them to stay focused and maintain concentration on work performance as compared to other employees, it results in an adverse impact on their job performance (Shinaver, 2015). People who are not suffering from ADHD do have greater employment status, earnings, and output in comparison with people with ADHD. Moreover, as the employees with ADHD keep on being absent from the workplace and produce lesser output, the cost associated with employing them is more than the cost of employing people who are not suffering from ADHD. If the employees with ADHD were provided with essential accommodations at their place of work, they would make progress (Sarkis, 2014). A disorder named ADHD highly prevails in the world. The People with ADHD contain noteworthy impairments. It prevails in adults very often (Imran, 2007).

“Attention-Deficit Hyperactivity Disorder is a neurological syndrome resulting in problems with self-regulation. ADHD is characterized by inattention and/or hyperactivity-impulsivity which causes impairment in at least two settings. These characteristics often arise in childhood and were previously thought to diminish during adolescence and disappear by adulthood. However, studies over the past decade indicate that although some symptoms may decrease in severity, ADHD does continue throughout adulthood for many individuals. The impact of this disorder is felt not only by the individuals with ADHD, but also by the various systems in which these individuals live, work, and socialize” (Reali, 2001). “In-role performance involves performing tasks that relate to formal requirements of the job e.g., making a product or delivering a service to a client” (Bozionelos & Bozionelos, 2013). “Job satisfaction is an attitudinal variable that reflects how people feel about their jobs” (Knights & Kennedy, 2005). “The term was coined in the late 1980s.

Organizational citizenship behavior refers to anything that employees choose to do, spontaneously and of their own accord, which often lies outside of their specified contractual obligations. In other words, it is discretionary. Organizational citizenship behavior may not always be directly and formally recognized or rewarded by the company through salary increments or promotions for example, though of course organizational citizenship behavior may be reflected in favorable supervisor and co-worker ratings, or better performance appraisals. In this way, it can facilitate future reward gain indirectly. Finally, and critically, organizational citizenship behavior must promote the effective functioning of the organization” (Organ, 1988).

Framing the principles of the attentional control theory (ACT) has helped to justify this study. Kessler et al. (2009) stated that according to the ACT, ADHD results in a lack of usefulness and proficiency in work performance. When the work performance of the people with ADHD was compared with their peers, it was realized that their (people with ADHD) performance lacked that vigor. The most noticeable symptoms of ADHD i.e., deficiency in focusing and prioritizing tasks, correspond well with the mechanisms suggested by the attentional control theory. Reacting to stimuli that require instant attention is the stimulus-driven approach. The goal-driven approach prioritizes the cognitive processes that allow people to continue moving toward comprehensive goals through cognitive processes (Miller & Cohen, 2001). According to the ACT, if people feel trouble focusing on their work performance, this is due to the disproportion between the stimulus-driven approach and the goal-driven approach. ACT suggests that problems with the people with ADHD arise when the stimulus-driven approach overlaps the goal-driven approach. Stimulus-driven system dominates in the people with ADHD. Briefly, we can say that ADHD sufferers are more influenced by the actions or events that need abrupt attention as compared to their in-role performance. Consequently, most of the time they are easily diverted from completing their tasks that relate to their in-role performance (Bozionelos & Bozionelos, 2013).

People with ADHD are employed in many organizations, and they are performing lower than others, but there is a lack of studies demonstrating how ADHD affects an employee's performance (Halbesleben et al., 2013). The main symptoms that depict that the people with ADHD are facing troubles are that they find it difficult to make a personal schedule, manage time, and pay attention to a specific task, cannot define priorities, and postpone different tasks. Mostly they are unable to consider the results of their actions. The symptoms described above make it clear that individuals with ADHD show lower performance in the workplace (Bozionelos & Bozionelos, 2013). Anxiety, uneasiness in meetings, and restricting people from getting finished as they (people with ADHD) cannot wait for their turn (Patton, 2009).

This study contributes to the relevant prevailing literature by stating that work engagement acts as a moderator in the relationship between attention deficit hyperactivity disorder and employees' outcomes that is: in-role performance, organizational citizenship behavior, and job satisfaction. Moreover, this study elaborates on the direct negative relationship between ADHD and job satisfaction. According to this study, ADHD has a negative impact on employees' outcomes i.e., in-role performance, organizational citizenship behavior, and job satisfaction. Work

engagement is proposed to be a moderating variable that weakens the negative relationship between ADHD and the proposed employees' outcomes (in-role performance, organizational citizenship behavior, & job satisfaction). In the United States, there was conducted a national household survey between February 2001 and April 2003, which resulted in the fact that 4.2% of workers were suffering from ADHD. Annually 35 days per worker were being lost due to ADHD. 120.0 million working days were being lost in the U.S.A., as shown by their associations. \$19.5 billion in human capital was lost. The cost of having ADHD at work is high (Kessler et al., 2005). Kessler et al. (2009) said that the total cost of ADHD may be far higher than the current estimate of roughly \$4,500 per employee per year for those with ADHD.

This study contributes to the prevailing literature relevant to the attentional control theory. It validates and stresses the attentional control theory. Attentional control theory helps individuals at their workplace to make rational decisions when anxiety and their tendency to prioritize stimulus-driven actions over goal-driven actions affect their ability to stay attentive toward their in-role performance. When such people face difficulty focusing on their work due to stress and anxiety, this state of mind can be better expressed by the attentional control theory (Halbesleben et al., 2013). Employees with ADHD exhibit lower performance. They have disputes with their peers. There is a risk that they can harm themselves and a significantly large number of people with ADHD quit their jobs as compared to others (Kessler et al., 2005; Murphy & Barkley, 1996; Weiss & Hechtman, 1993). As people with ADHD need to have certain additional resources to ensure their survival in their organization, this study suggests that the management of organizations should introduce certain reforms and interventions in their workplace to increase the work engagement of their employees with ADHD. This would result in the enhancement of their job satisfaction and their increased and improved inclination towards their in-role performance and organizational citizenship behavior.

## LITERATURE REVIEW

The neurodevelopmental disorder named ADHD pertains concept, far more heterogeneous than it initially appears (Agnew-Blais & Michelini, 2023). Sonuga-Barke et al. (2023) address an important topic for potential upcoming studies, named "active" gene-environment association in ADHD, in which people choose and modify their environment following their genetic predisposition. Such a person would be inclined to shape his environmental context according to his predisposition. When compared to their intellectual capacity, many adults with ADHD underperform in both their academic and professional lives. Compared to adults without ADHD, they experience higher levels of stress and take more time off work due to illness (Oscarsson et al., 2022). ADHD has direct effects on employees' goal-oriented performance and nonproductive behaviors in the workplace (Rosario-Hernández et al., 2020). The psychological disorder named ADHD highly prevailing in children, mostly lasts till their adulthood (Kooij et al., 2019). In youngsters, ADHD ranks second in terms of chronic disorder and is the most frequently prevalent behavioral ailment (Wolraich et al., 2019). A significant number of children suffering from ADHD continue with this disorder during their adulthood (Sudre et al., 2017). Children and

adults both are affected by the commonly prevailing psychological disorder named ADHD. This results in several abnormalities in their performance and activities (Matza et al., 2005). Kessler et al. (2006) stated that as they took Americans' demonstrative sample, they got to know that 4.4% of employees were suffering from ADHD. As this 4.4% was derived from self-reporting criteria, this is supposed to be underestimated due to certain parameters defined by society. Adults' ADHD results in lower performance in the workplace. Clinical observations show that adults' ADHD results in role impairment (Adler & Spencer, 2004). Through neuropsychological evidence, we believe that impairment occurs in cognitive functioning due to ADHD in adults (Hervey et al., 2004). Adults suffering from ADHD exhibit lower work performance and functional impairments (Biederman et al., 2005). This is hypothesized on the basis of the references given above:

*H1: There is a significant negative relationship between employees' attention deficit hyperactivity disorder and in-role performance.*

*H2: There is a significant negative relationship between employees' attention deficit hyperactivity disorder and organizational citizenship behavior.*

*H3: There is a significant negative relationship between employees' attention deficit hyperactivity disorder and job satisfaction.*

Researchers and practitioners believe that the employees engrossed in their job, show good performance and low absenteeism rates. Goal-oriented practices at workplace and work engagement have positive association with each other and work engagement is negatively associated with absenteeism (Neuber et al., 2022). Employers are very interested in work engagement since a lower level of work engagement results in a greater loss of productivity. Due to their intrinsic and/or extrinsic motivation, high job authority and high level of social well-being are regarded as the main factors influencing employees' engagement in work (Nagata et al., 2019). One important element that can benefit organizations both now and in the future is work engagement (Rahal & Farmanesh, 2022). A positive and satisfying job-relevant mental status having characteristics of vigor, devotion, and fascination is called work engagement. A current assessment states that work engagement is positively associated with intellectual and psychosomatic fitness and innate inspiration, being with the opinion of self-productiveness, optimistic approach to job performance and firm as a whole, and satisfactory employees' outcomes (Schaufeli & Salanova, 2007).

According to Schaufeli et al. (2002), an optimistic gauge of professional welfare that consists of three aspects i.e., robustness, commitment, and captivation is called work engagement. Individuals engaged in their work are greatly vigorous and energized, are passionate and excited about their work-relevant responsibilities and mostly they are absorbed, engrossed, and occupied with their work. People who are engaged in their jobs are enthusiastic and have a strong bond with their work (Bakker et al., 2008). Kahn (1992) stated that engagement is psychological attendance or being completely present at the activity whatever it is. It is when an individual is alert, associated, cohesive, and absorbed in his job performance. Engagement is a specific psychological frame of

mind, in which one puts all of his possible energy towards the performance of his particular job character. It is perceived to be the indicator of his mental and psychological attendance, a specific psychological condition. Engagement is something that ends in some obvious beneficial consequences for the person himself like he becomes able to confirm his progress and for his firm as well like he assures in-role performance and organizational citizenship behavior very well. After studying the internal attributes, emotional and intellectual aspects of Job Satisfaction, Organ (1989) believed that organizational citizenship behavior is associated with the perceptive assessment of the reward of workplace performance. When employees with ADHD are engrossed in their work, they would like to perform extra-role activities besides their in-role performance, hence, they would be satisfied with their job. Despite being with ADHD if an employee would be engaged in his work, would have job satisfaction because his job performance (in-role and extra-role behavior) would be satisfactory. Work engagement is a useful, accomplishing, impactful, and encouraging position of prosperity relevant to a job that is specified by stamina, commitment, and immersion. There exist different beliefs regarding work engagement, many intellectuals believe that engaged employees contain enormous vigor and are greatly tied to their work (Bakker et al., 2008). Kahn (1990) theorized engagement to be a condition of someone during which he involves himself bodily, intellectually, spiritually, and psychologically toward his job character. Halbesleben (2010) said that the research work of different researchers constantly depicts one thing and that is, an employee's work engagement is positively associated with his in-role performance and organizational citizenship behavior. This is hypothesized on the basis of the references given above:

*H4: There is a significant positive relationship between employees' work engagement and in-role performance.*

*H5: There is a significant positive relationship between employees' work engagement and organizational citizenship behavior.*

*H6: There is a significant positive relationship between employees' work engagement and job satisfaction.*

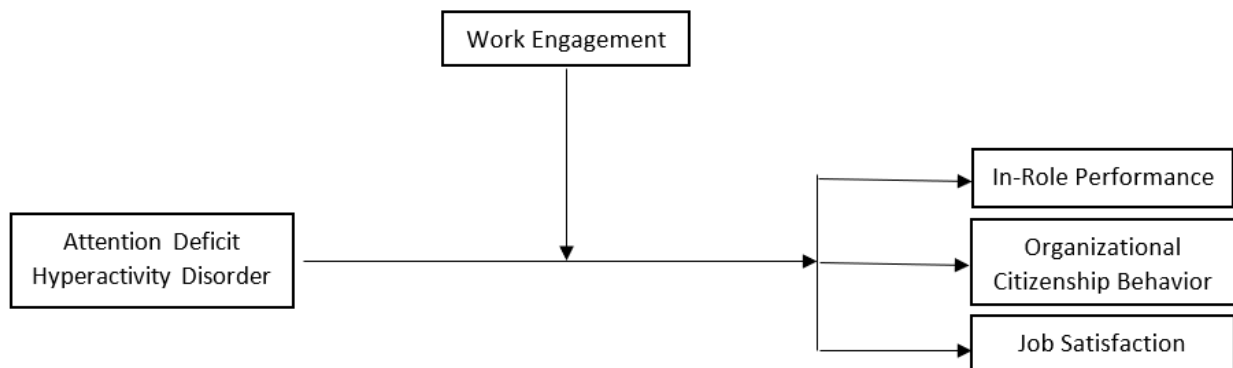
Halbesleben et al. (2013) stated that employees with ADHD need certain additional resources to invest in the execution of their duties. Such employees require sufficient additional resources to enhance their engagement in job and to weaken the negative association between ADHD and employees' outcomes. If people with ADHD get an opportunity to work according to their interests at a place where they feel at ease, they can be prosperous even overachievers (Weiss & Weiss, 2004). Adults suffering from ADHD exhibit lower work performance because they do not utilize their available means with much effectiveness. Work engagement is defined as an optimistic and satisfying work-related mental situation with features i.e., stamina, energy, potency, commitment, and captivation (Schaufeli et al., 2002; Bakker et al., 2008). Work engagement is proposed to be a moderating variable that weakens the negative relationship between ADHD and the proposed employees' outcomes like in-role performance, organizational citizenship behavior,

and job satisfaction. If the work engagement of employees with ADHD is increased through introducing certain interventions within the organization, then the work immersion of such employees will be enhanced thus employees will be involved in their in-role performance in a better way. They will be able to exercise organizational citizenship behavior as well in this way because when they realize that they are getting better at their responsibilities specified in their job description, they will further move towards extra-role behavior, hence their job satisfaction level will be enhanced. Schaufeli and Salanova (2007) said that being engrossed in job is a work-relevant attitude. It is an aspect that produces constructive consequences at the workplace and everywhere else. This is hypothesized on the basis of the references given above:

*H7: Work engagement acts as a moderator of the relationship between attention deficit hyperactivity disorder and in-role performance in a way that this relationship will be weak when work engagement is high.*

*H8: Work engagement acts as a moderator of the relationship between attention deficit hyperactivity disorder and organizational citizenship behavior in a way that this relationship will be weak when work engagement is high.*

*H9: Work engagement acts as a moderator of the relationship between attention deficit hyperactivity disorder and job satisfaction in a way that this relationship will be weak when work engagement is high.*



*Figure 01: Framework*

## RESEARCH METHODOLOGY

### Research Design

This is a causal study. This is stated to be a field study, as respondents i.e., the workforce have been approached at their workplace to attain their responses by filling out the questionnaires. The population of the current study comprises employees from different public and private sectors i.e., banking, manufacturing, education, and service sectors (office work) of Islamabad, Rawalpindi, and Wah Cantt.

There has been negligible research interference. Data has been collected through cross-sectional data collection criteria. Kessler et al. (2009) also gathered their primary data through the distribution of questionnaires during their survey conducted in the United States relevant to adult ADHD. In this study quantitative technique has been adopted. Primary data has been collected through self-reported assessment of respondents by the distribution of questionnaires which is a comfortable technique for respondents and provides them with a chance to reciprocate in a valid and well-considered way. SPSS is the data analysis software in the study.

This study is based on Convenience Sampling. MacCallum et al. (1999) proposed that the subject-to-item ratio should be **5:1** for a representative sample. There are different types of formulas to determine the sample size for a given population, among which one formula for appropriate sample size calculation is to multiply the total number of items in the questionnaire by **5** or **10**. The sample size of this study is calculated by “Total No. of items in questionnaire \***5**= **50\*5=250**”. Based on Convenience Sampling, **300** closed-ended questionnaires based on the population size have been distributed among employees, while these **50** extra questionnaires have been distributed taking the non-response issue under consideration. **259** questionnaires out of **300** have been collected due to non-response issues. While the overall response rate was **86.33%**.

### **Demographic Characteristics of the Sample**

The sample of **259** employees consists of **68.3%** male participants and **31.7%** female participants. **51.7%** of respondents have master’s degree, **23.2%** have bachelor’s degree, **22.0%** have MPhil degree, and **3.1%** have Ph.D. degree. **35.1%** of the respondents are **26-30** years old, **23.6%** are **31-35** years old, **18.5%** are **36-40** years old, **9.3%** are **20-25** years old, **8.1%** are **46** years or above, and **5.4%** of the respondents are **41-45** years old. **39.4%** of respondents have **1-5** years of experience, **25.9%** have **6-10** years of experience, **19.3%** have **11-15** years of experience, **9.3%** have **16-20** years of experience, **4.6%** have **26** years or more experience, and **1.5%** participants have **21-25** years of experience. **64.5%** of respondents are married, **35.1%** are single, and **.4%** are widows.

### **Scales and Measures of the Study Variables**

Each of the study variables except attention deficit hyperactivity disorder has been measured on a 5-point Likert scale ranging from Strongly Disagree=1 to strongly agree=5. Because ADHD has been measured at ASRS-v1.1 ranging from Never to Very Often. ADHD was measured by an adult ADHD self-report scale (ASRS-v1.1) symptom checklist by Adler, Kessler, and Spencer in 2003. The questionnaire consists of 18 items relevant to ADHD. The questionnaire reports that DSM-IV consists of impairments, symptoms, and history for an exact and rectified diagnosis. For example, an item of this questionnaire is “How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?” Job satisfaction was measured through a 6-item 5-point Likert scale developed by Agho et al. (1992). For example, an item is “I feel fairly well satisfied with my job.” In-role performance was measured by a 6-item 5-



point Likert scale by Williams and Anderson (1991). One sample item is “Adequately completes assigned duties.” Organizational citizenship behavior was measured by a 15-item 5-point Likert scale by Williams and Anderson (1991). One of the items is “Helps others who have been absent.” Work engagement was measured by a 5-item 5-point Likert scale by Bledow et al. (2011). For example, one of the items is “I feel strong and vigorous in my work”. The questionnaire used for the collection of primary data is given at the end of the paper in the appendix.

Values of Cronbach's Alpha for each study variable have been presented in Table 1 given below:

**Table 1: Reliability Analysis**

Variable	Items	Cronbach's alpha
ADHD	18	.949
IRP	06	.894
OCB	15	.944
JS	06	.872
WE	05	.921

## RESULT AND DISCUSSION

There are descriptive statistics i.e., values of Mean and Standard Deviation of the study variables, values of Correlation among all the study variables, and values of Reliability after analysis of all the study variables presented in Table 2 are given below. This is to state that Correlation among all the study variables is significant at  $p < .01$  level.

**Table 2: Mean, Standard Deviation, Correlation, and Reliabilities**

Variables	Mean	S.D.	1	2	3	4	5
1. ADHD	2.9041	.85392	(.949)				
2. WE	3.8803	.92747	-.459**	(.894)			
3. JS	3.5749	.89974	-.455**	.703**	(.944)		
4. IRP	3.7954	.81844	-.583**	.651**	.747**	(.872)	
5. OCB	3.7202	.83414	-.565**	.724**	.803**	.851**	(.921)

\*\* . Correlation is significant at the 0.01 level (2-tailed)

The Bivariate Correlation Matrix indicates that there is a statistically negative Correlation between attention deficit hyperactivity disorder and work engagement ( $r = -.459$ ,  $p < .01$ ), ADHD and job satisfaction ( $r = -.455$ ,  $p < .01$ ), ADHD and in-role performance ( $r = -.583$ ,  $P < .01$ ), ADHD and organizational citizenship behavior ( $r = -.565$ ,  $p < .01$ ). There is a statistically positive Correlation between work engagement and job satisfaction ( $r = .703$ ,  $p < .01$ ), work engagement and in-role performance ( $r = .651$ ,  $p < .01$ ), work engagement and organizational citizenship behavior ( $r = .724$ ,  $p < .01$ ). There is a statistically positive Correlation between job satisfaction and in-role performance ( $r = .747$ ,  $p < .01$ ), job satisfaction and organizational citizenship behavior ( $r = .803$ ,  $p < .01$ ). There is a statistically positive Correlation between in-role behavior and organizational citizenship behavior ( $r = .851$ ,  $p < .01$ ). The results of Bivariate Correlation Matrix provide support for all of the Hypotheses of the study.

In the regression analysis, two steps were carried out for the first dependent variable, the same was the case for the second and third dependent variables. In the first step independent variable (attention deficit hyperactivity disorder) and moderator (work engagement) were entered while the first dependent variable (job satisfaction) was entered in the box of the dependent variable. In the second step, the Interaction Term (ADHD×WE) was entered. This process was repeated for the second and third dependent variables. There are the results of the regression analysis presented in Table 3.

**Table 3: Results of Regression Analysis**

Predictors	JS			IRP			OCB		
	B	R <sup>2</sup>	ΔR <sup>2</sup>	β	R <sup>2</sup>	ΔR <sup>2</sup>	β	R <sup>2</sup>	ΔR <sup>2</sup>
<b>Step 1</b>									
<b>Main Effect</b>									
ADHD	-.17*	.51		-.34*	.52		-.28*	.59	
WE	.606*			.42*			.52*		
<b>Step 2</b>									
ADHD×WE	.14*	.53	.01	.22*	.57	.05	.24*	.64	.05

\*P<0.05

Regression analysis was carried out during which the combined effect of ADHD and work engagement on job satisfaction was observed. It was done in two steps. In step one, ADHD, and work engagement both were entered as predictors, and job satisfaction was entered as the dependent variable. In step two, the interaction term i.e., ADHD×WE was entered as a predictor and job satisfaction as the dependent variable. In the results, we found that in the table of Model Summary, the value of R<sup>2</sup> for Model 1 was **.51** and for Model 2, it was **.53**. Value of ΔR<sup>2</sup> for Model 2 was **.01**. In the table of coefficients, the beta value for ADHD was (**-.17\***, **p<.05**), for work engagement (**.606\***, **p<.05**), for (ADHD×WE) (**.14\***, **p<.05**). The same process was carried out for the other two dependent variables as well. It was realized in this research work that Hypotheses H3, H6, and H9 were supported.

The combined effect of ADHD and work engagement on in-role performance was analyzed during regression analysis. The same procedure was revised as it was carried out above for job satisfaction except, for one thing, this time the dependent variable was in-role performance instead of job satisfaction. We got the results in the table of Model Summary as, the value of R<sup>2</sup> for Model 1 was **.52** and for Model 2, it was **.57**. Value of ΔR<sup>2</sup> for Model 2 was **.05**. In the table of coefficients, the beta value for ADHD was (**-.34\***, **p<.05**), for work engagement (**.42\***, **p<.05**), for (ADHD×WE) (**.22\***, **p<.05**). In this study, Hypotheses H1, H4, and H7 were supported.

ADHD, work engagement, and the interaction term (ADHD×WE) were regressed and their combined effect on organizational citizenship behavior was interpreted. Similar steps were repeated, as were carried out above for job satisfaction except, for one thing, this time the dependent variable was organizational citizenship behavior instead of job satisfaction. In the table of Model Summary, the results we obtained were, the value of R<sup>2</sup> for Model 1 was **.59** and for

Model 2, it was **.64**. The value of  $\Delta R^2$  for Model 2 was **.05**. In the table of coefficients, the beta value for ADHD was (**-.28\***, **p<.05**), for work engagement (**.52\***, **p<.05**), for (ADHD×WE) (**.24\***, **p<.05**). Hypotheses H2, H5, and H8 were supported, as the results were derived.

An Excel template has been downloaded that helps interpret two-way interaction effects. Procedures by Dawson (2014) have been followed to plot the interaction effects. In this figure, there is ADHD at the x-axis and job satisfaction at the y-axis. Certain values that were required to make the figure are the name of the independent variable (ADHD), the name of the moderator (work engagement), unstandardized regression coefficients i.e., independent variable (-.742), moderator (.080), interaction (.144), intercept/constant (3.850). Means/SDs of the variables i.e., mean of the independent variable (2.9041), SD of the independent variable (0.85392), mean of the moderator (3.8803), SD of the moderator (0.92747). There are two lines in this graph. One of them is a smooth straight line which denotes low work engagement and the other one is a dotted line, which depicts high work engagement. Both of these lines are situated in the figure in a way that they would intersect each other at a point.

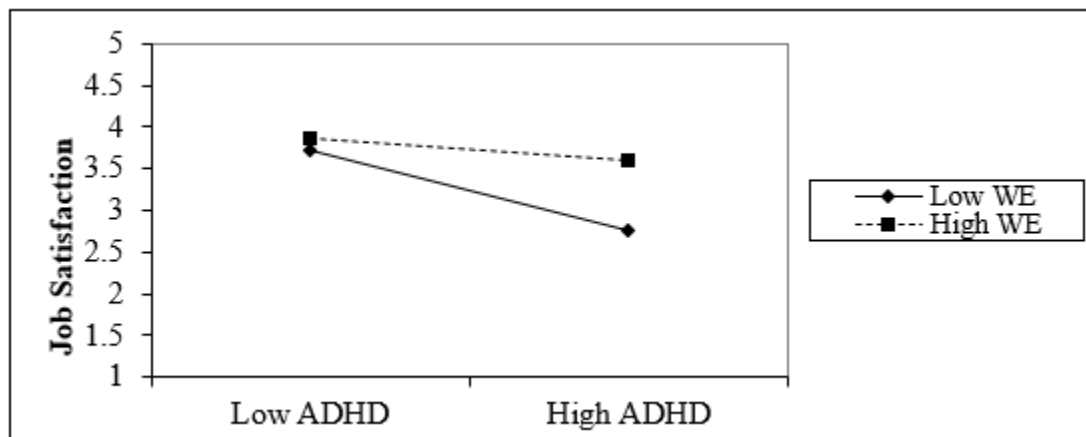


Figure 1

In this figure, there is ADHD at the x-axis and in-role performance at the y-axis. Certain values that were required to make the figure are the name of the independent variable (ADHD), name of the moderator (work engagement), unstandardized regression coefficients i.e., independent variable (-1.227), moderator (-.392), interaction (.225), intercept/constant (6.429). Means/SDs of variables i.e., mean of the independent variable (2.9041), SD of the independent variable (0.85392), mean of the moderator (3.8803), SD of the moderator (0.92747). There are two lines in this graph. One of them is a smooth straight line which denotes low work engagement and the other one is a dotted line, which depicts high work engagement. Both of these lines are situated in the figure in a way that they would intersect each other at a point.

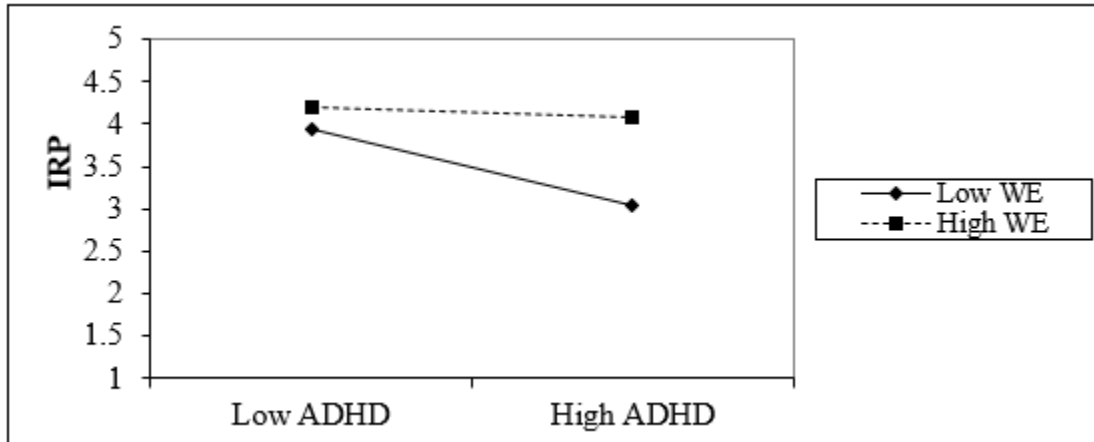


Figure 2

In this figure, there is ADHD at the x-axis and organizational citizenship behavior at the y-axis. Certain values that were required to make the figure are the name of the independent variable (ADHD), name of the moderator (work engagement), unstandardized regression coefficients i.e., independent variable (-1.234), moderator (-0.350), interaction (0.241), intercept/constant (6.039). Means/SDs of variables i.e., mean of the independent variable (2.9041), SD of the independent variable (0.85392), mean of the moderator (3.8803), SD of the moderator (0.92747). There are two lines in this graph. One of them is a smooth straight line which denotes low work engagement and the other one is a dotted line, which depicts high work engagement. Both of these lines are situated in the figure in a way that they would intersect each other at a point.

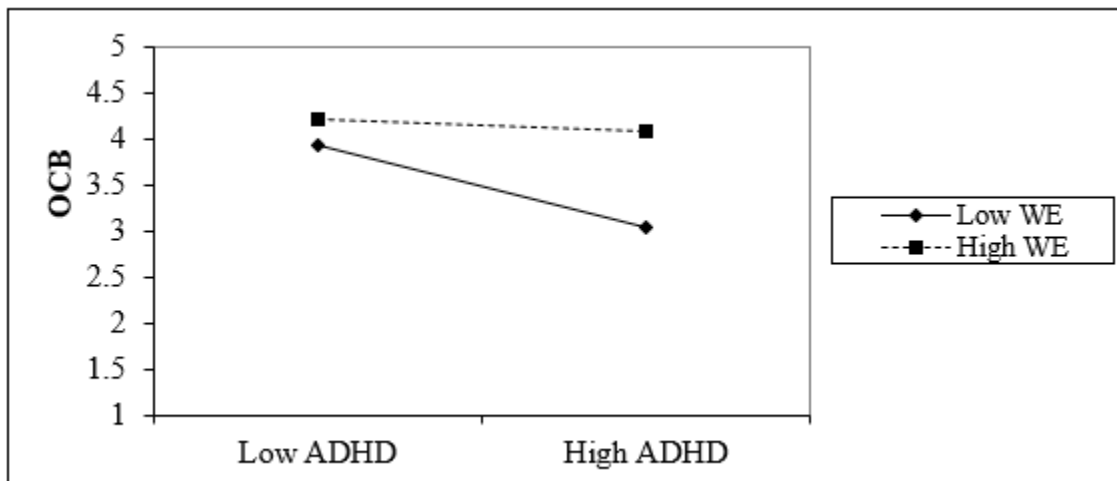


Figure3

The results of the study depict that all of the Hypotheses have been supported. The findings of the study propose that all of the predictions have been justified.

Hypothesis H1 i.e. “There is a significant negative relationship between employees’ attention deficit hyperactivity disorder and in-role performance” has been supported because of the level of significance i.e.,  $p < .05$ , So the beta value  $-.34^*$  is significant. As the beta value is significant and negative, the conclusion derived from it is that “there is a significant negative relationship between employees’ attention deficit hyperactivity disorder and in-role performance.”

Hypothesis H2 i.e. “There is a significant negative relationship between employees’ attention deficit hyperactivity disorder and organizational citizenship behavior.” has been supported because of the level of significance i.e.,  $p < .05$ , So the beta value  $-.28^*$  is significant. As the beta value is significant and negative, the conclusion derived from it is that “there is a significant negative relationship between employees’ attention deficit hyperactivity disorder and organizational citizenship behavior.”

Hypothesis H3 i.e. “There is a significant negative relationship between employees’ attention deficit hyperactivity disorder and job satisfaction.” has been supported because of the level of significance i.e.,  $p < .05$ , So the beta value  $-.17^*$  is significant. As the beta value is significant and negative, the conclusion derived from it is that “there is a significant negative relationship between employees’ attention deficit hyperactivity disorder and job satisfaction.”

Hypothesis H4 i.e. “There is a significant positive relationship between employees’ work engagement and in-role performance” has been supported because of the level of significance i.e.,  $p < .05$ , So the beta value  $.42^*$  is significant. As the beta value is significant and positive, the conclusion derived from it is that “there is a significant positive relationship between employees’ work engagement and in-role performance.”

Hypothesis H5 i.e. “There is a significant positive relationship between employees’ work engagement and organizational citizenship behavior” has been supported because of the level of significance i.e.,  $p < .05$ , So the beta value  $.52^*$  is significant. As the beta value is significant and positive, the conclusion derived from it is that “there is a significant positive relationship between employees’ work engagement and organizational citizenship behavior.”

Hypothesis H6 i.e. “There is a significant positive relationship between employees’ work engagement and job satisfaction” has been supported because of the level of significance i.e.,  $p < .05$ , So the beta value  $.60^*$  is significant. As the beta value is significant and positive, the conclusion derived from it is that “there is a significant positive relationship between employees’ work engagement and job satisfaction.”

The results propose that Hypotheses H1, H4, and H7 have been supported. As the level of significance was less than **0.05**, the beta value i.e.,  $-.34^*$  was significant, thus Hypothesis H1 was supported, and the derived conclusion was that there is a significant negative relationship between employees’ attention deficit hyperactivity disorder and in-role performance. The level of

significance was less than **0.05**, the beta value i.e., **.42\*** was significant, Hypothesis H4 was supported, and it was realized that there is a significant positive relationship between employees' work engagement and in-role performance. The level of significance was less than **0.05**, and the beta value which was **.22\*** was significant, hence Hypothesis H7 was supported thus this is to state that "Work engagement acts as a moderator between the relationship of attention deficit hyperactivity disorder and in-role performance in a way that this relationship will be weak when work engagement is high."

According to the results derived through regression analysis, Hypotheses H2, H5, and H8 have been supported. The regression table indicates that the level of significance was less than **0.05**, and the beta value i.e., **-.28\*** was significant, hence Hypothesis H2 was supported, and the research work indicates that there is a significant negative relationship between employees' attention deficit hyperactivity disorder and organizational citizenship behavior. The level of significance was less than **0.05**, the beta value i.e., **.52\*** was significant, and Hypothesis H5 was supported according to which there is a significant positive relationship between employees' work engagement and organizational citizenship behavior. The level of significance was less than **0.05**, and the beta value which was **.24\*** was significant, that is how Hypothesis H8 was supported, according to which "Work engagement acts as a moderator between the relationship of attention deficit hyperactivity disorder and organizational citizenship behavior in a way that this relationship will be weak when work engagement is high."

Hypotheses H3, H6, and H9 have been supported. Results suggest that as the level of significance was less than **0.05**, the beta value i.e., **-.17\*** was significant, hence Hypothesis H3 was supported, and the study indicates that there is a significant negative relationship between employees' attention deficit hyperactivity disorder and job satisfaction. The level of significance was less than **0.05**, and the beta value i.e., **.606\*** was significant, thus Hypothesis H6 was supported, that is why this is to be said that there is a significant positive relationship between employees' work engagement and job satisfaction. The level of significance was less than **0.05**, and the beta value which was **.14\*** was significant, which resulted in the realization that Hypothesis H9 was supported and now this is to state that "Work engagement acts as a moderator between the relationship of attention deficit hyperactivity disorder and job satisfaction in a way that this relationship will be weak when work engagement is high."

It was found from the research sample that there was a negative relationship between ADHD and employees' outcomes i.e., in-role performance, organizational citizenship behavior, and job satisfaction. The results also confirm the hypothesized role (moderating role) of work engagement in the relationship between ADHD and employees' outcomes. The derived results of the study proved that work engagement and employees' outcomes are significantly positively associated with each other. The results of the study prove that when work engagement of the employees with ADHD increases, it weakens the negative relationship between ADHD and employees' outcomes i.e., job satisfaction, in-role performance, and organizational citizenship behavior. Research indicates that engagement is a distinctive aspect, that is authentically

forecasted through work-relevant means or essential features like authority, check and balance, mentoring or provided by proper guidelines, response or comments at the job done, and private means like hopefulness, self-efficacy, and self-esteem. Another thing is that work engagement predicts in-role performance as well as customer approval and satisfaction (Bakker et al., 2008). Research proves that highly engaged employees devote their additional resources to their in-role performance and organizational citizenship behavior (Bakker et al., 2008; Halbesleben & Wheeler, 2008; Llorens et al., 2007; Salanova et al., 2005; Salanova et al., 2006).

## **CONCLUSION AND POLICY IMPLEMENTATION**

### **Policy Implementations**

There exist a considerable number of adults with ADHD, who are employed in different organizations. After conducting research, it has been realized that employees who have ADHD, exhibit lower work performance (Kessler et al., 2005; Murphy & Barkley, 1996; Weiss & Hechtman, 1993). A considerable number of research papers have reported that most adults with ADHD demonstrate impaired behavior in the professional area and face problems in managing full-time employment (Antshel, 2018). This study suggests that by increasing work engagement of employees with ADHD, their outcomes i.e., in-role performance, job satisfaction, and organizational citizenship behavior would improve. To increase work engagement, employees require certain additional resources. Adults with ADHD face the problem of having a lack of concentration during their casual work-related meetings and routine training, hence they are not capable of holding most of the material shared with them. There could be practical, rational, and realistic arrangements that might accommodate such work-relevant reservations and help an individual with ADHD to be more effective, creative, and fruitful. An employer is required to be judicious and to provide his employees with ADHD with certain additional resources, to overcome or minimize the bad impacts of this disorder (Tominey & Tominey, 2001). Matza et al. (2005) surveyed different employers which resulted in the fact that employers hardly knew about what reforms could have been undertaken for the workforce with ADHD. Hardly a few firms exist that accommodate the people with ADHD. A factor of concern is that normally even the workforce with ADHD itself has no idea that they have ADHD, this is why they do not avail exemptions (Patton, 2009). People with ADHD face difficulty managing their resources accurately to improve their work performance. Now, this is the responsibility of firm management to tackle the issue. There exists a great possibility that certain individuals suffering from ADHD are being employed. This is important to take an account of the knowledge of the human resources managers and employers, whether they have an understanding of ADHD or not. First, they would have to get acknowledged of ADHD, then this is required by them to provide essential additional resources to their employees with ADHD to improve their outcomes. The time management and organizational skills of the people with ADHD can be increased by providing them with workplace accommodations and behavioral therapies by giving them relevant training (Sarkis, 2014).

## **Implications for Theory**

The theorists of the attentional control theory suggest that people who are suffering from attention control problems, lose attention and are distracted from task-relevant approach to extra-role behaviors (Eysenck & Derakshan, 2011). If a person has difficulty with his attention control, then stimuli can drag him towards an imbalanced condition of preferring task-irrelevant behaviors over task-relevant behaviors (Eysenck et al., 2007). The study states that ACT helps explain the workplace behavior of people whose capacity to control attention might be affected due to anxiety, ADHD, or certain other impairments. The study validates the attentional control theory by stating and proving that ADHD results in a lack of usefulness and proficiency in work performance. Employees with ADHD exhibit lower job performance as compared to their peers. Many adults who have ADHD are employed. People who have ADHD show different types of adverse outputs (Kessler et al., 2005; Murphy & Barkley, 1996; Weiss & Hechtman, 1993). ACT states that people with a deficiency of attention control exhibit lower performance as compared to employees who do not have this problem (Eysenck et al., 2007). The findings of the study support and strengthen the given concepts associated with the attentional control theory.

## **Conclusion**

This study adds to the literature while proposing that there is a negative relationship between employees' ADHD and employees' outcomes i.e., in-role performance, job satisfaction, and organizational citizenship behavior. Work engagement acts as a moderator in the relationship between ADHD and employees' outcomes in a way that this relationship would be weak when work engagement is high, given that there is a positive relationship between work engagement and employees' outcomes. The study has been supported by, validates, and stresses the attentional control theory. The study was conducted through convenient sampling. 259 questionnaires were collected from employees of different public and private sectors i.e., banking, manufacturing, education, and service sectors (office work) of Islamabad, Rawalpindi, and Wah Cantt. Each one of the nine hypotheses of the study was supported. Hence, the study concludes that when an employee with ADHD would be engaged in his work at the workplace, he would exhibit better employee outcomes.

## **Limitations and Directions for Future Research**

This research could have been longitudinal instead of being cross-sectional. However, the cross-sectional method has been adopted due to time and money constraints. This is to suggest for future researchers that they can research "How to create or increase work engagement of employees with ADHD to weaken the negative relationship between them (employees with ADHD) and their outcomes (employees' outcomes i.e., job satisfaction, in-role performance, & organizational citizenship behavior). As Kitchen (2006) anticipated arrangements that should be made for employees with ADHD to increase their work engagement should be some sort of time management tools i.e., to make lists, and provide a noise-free, well-managed, and systemized workplace to have focused employees towards their responsibilities. Human resource managers



are liable to ensure only work-related computer applications in the systems of employees with ADHD to minimize the possibility of them being distracted from their duties. Some more things that can be done are that employees with ADHD can be provided with directions both verbally and in a black-and-white way. Also, they can be accommodated with graphic or pictorial format and leaflets to give instructions (Tominey & Tominey, 2001). Such employees can use audio recordings as well to enhance their productivity. Information for assessment can be taken from others (superiors, colleagues, & subordinates of the employee) as well besides the employee (with ADHD) himself. People who have ADHD, prove to be good entrepreneurs. Also, they are good at fast-moving setups (Arnst, 2003; Carroll & Ponteretto, 1998; Lamberg, 2003; Wyld, 1996). More than a few empirical research papers highlight a relationship between attention-deficit/hyperactivity disorder and entrepreneurship. Current study endorses that entrepreneurship is a reasonable professional choice for adults with ADHD (Antshel, 2018). It could be considered in a future study to differentiate those effects depending on gender, marital status, and certain other demographics of respondents.

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**Appendix**

Dear Respondent,

I am a research scholar at the [MASKED FOR REVIEW]. As I am conducting a survey. Answers to the questions below should be based on your experience in your present job. Your responses will be kept confidential and used only for research. Your identity will not be revealed. So please express an unbiased opinion. It's a request to kindly take 15 minutes out of your busy schedule to complete the questionnaire. Your kind consideration of my humble request will be highly appreciated.

Best regards,

[MASKED FOR REVIEW]

Research Scholar, [MASKED FOR REVIEW]

<b>Section 1: Demographics</b>				
Gender:	▪ Male	▪ Female		
Highest Qualification	▪ Bachelors	▪ Masters	▪ MPhil/MS	▪ PhD
Designation:	Age:			
Total Experience	Marital Status:			

Kindly respond the given questionnaire, you are supposed to rate yourself on every one of the phenomenon given below utilizing the scale presented in the table. Put an X in the box to answer the questions that exhibit your feelings and practices in the last 6 months.

Sr. No.	Section 2	Never	Rarely	Some times	Often	Very Often
1	How frequently, after the difficult aspects of a project are finished, do you face trouble wrapping up the last few details?					
2	How frequently do you face trouble in organizing things, when you are supposed to do a task that demands organization?					
3	How frequently do you struggle to recall appointments or other obligations?					
4	How frequently do you postpone starting an activity that needs much consideration?					
5	How often do you get anxious, fidget, or squirm with your hands or feet when you have to sit down for a long time?					
6	How frequently do you feel that you are being driven by a motor, extremely active, and under pressure to do things?					
7	When working on a tedious or challenging job or task, how frequently do you make careless errors?					
8	How frequently do you find it hard to focus when undertaking tedious or monotonous work?					

9	How frequently do you find it hard to focus on what people are saying to you, even when they are speaking directly to you?					
10	How frequently do you lose things at home or work or have trouble finding them?					
11	How frequently is your attention diverted by noise or activity in your surroundings?					
12	How frequently do you get up from your seat at meetings or other events where you are supposed to stay seated?					
13	How frequently do you feel fidgety or restless?					
14	How frequently do you find it hard to unwind and relax during your personal time?					
15	How frequently do you talk too much in social settings?					
16	How frequently do you find yourself completing a person's sentence during a discussion before they can complete it themselves?					
17	How frequently do you find it tough to wait for your turn when it's necessary?					
18	How frequently do you disturb busy people?					
	<b>Section 3: Work Engagement</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neither disagree nor agree</b>	<b>Agree</b>	<b>Strongly Agree</b>
19	I feel strong and full of energy during my work.					
20	I feel much more energetic during work.					
21	Concerning my work, I have enthusiasm.					
22	I am motivated by my work.					
23	I am blissfully absorbed in my work.					
	<b>Section 4: Job Satisfaction</b>					
24	I rarely, hardly ever, or never feel exhausted at work.					
25	I would not even think of taking a different job.					
26	I appreciate my job more than an average individual.					
27	I genuinely enjoy my work.					
28	I am well satisfied with my employment.					
29	I am generally motivated and passionate about my work.					
	<b>Section 5: In Role Performance and Organizational Citizenship Behavior.</b>					
30	perform duties as stated in the job description.					
31	Carries out the duties that are required by them.					
32	Fulfills official performance requirements of the job.					



33	Participates in tasks that have a direct impact on how his or her performance is assessed.					
34	Do not ignore the requirements of the employment he/she is responsible for performing.					
35	Effectively executes key responsibilities.					
36	Helps their absent colleagues.					
37	Helps those who have work overload.					
38	They assist superiors in their tasks even when not requested to do so.					
39	Spends time considering the concerns and issues of colleagues.					
40	Shows keen interest in the coworkers.					
41	Communicates information to colleagues.					
42	Workplace attendance is above average.					
43	Gives notice of absence when unable to report for duty.					
44	Avoid taking undeserved work breaks.					
45	Less time spent having private chats.					
46	Do not complain about insignificant things at work.					
47	Safeguards the assets of the organization.					
48	Follows informal rules designed to keep order.					
49	Makes extra effort to assist new staff.					
50	Sufficiently accomplishes assigned tasks.					