




Artículo Original

ADHD and its Effects on Job Performance: A Moderated Mediation Model

TDAH y sus Efectos en el Desempeño Laboral: Un Modelo de Mediación Moderada

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ABSTRACT

The purpose of the present study was to examine the effects of ADHD on job performance and the possible mediating role of work engagement and moderating role of gender. Hypotheses testing were performed using structural equation modeling base on PLS-SEM approach applied to a sample of 448 employees from different organizations in Puerto Rico. The results shown that ADHD has a direct effect on task performance and counterproductive work behaviors, but none on organizational citizenship behaviors. Meanwhile, the relationship between ADHD and task performance/organizational citizenship behavior were mediated by work engagement. On the other hand, gender moderated the relationship between ADHD and counterproductive work behaviors on which males were more strongly to show counter-productive work behaviors under high levels of ADHD than females. Findings are discussed in the light of their theoretical and practical implications for future studies.

Keywords: ADHD; job performance; task performance; organizational citizenship behavior; counterproductive work behavior; work engagement

RESUMEN

El propósito del presente estudio fue examinar los efectos del TDAH en el desempeño laboral y el posible papel mediador del engagement con el trabajo y el papel moderador del género. La prueba de hipótesis se realizó

utilizando el modelo de ecuaciones estructurales basado en residuales (PLS-SEM) aplicado a una muestra de 448 empleados de diferentes organizaciones en Puerto Rico. Los resultados mostraron que el TDAH tiene un efecto directo en el desempeño de las tareas laborales y la manifestación de conductas laborales contraproducentes, pero no tuvo un efecto directo en la manifestación de conductas de ciudadanía organizacional. Mientras tanto, la relación entre el TDAH y el desempeño de las tareas laborales y la manifestación de conductas de ciudadanía organizacional estuvo mediada por el engagement con el trabajo. Por otro lado, el género moderó la relación entre el TDAH y la manifestación de conductas laborales contraproducentes en los que los hombres con altos niveles de TDAH mostraron mayores conductas laborales contraproducentes que las mujeres. Los resultados se discuten a la luz de sus implicaciones teóricas y prácticas para futuros estudios.

Palabras Claves: TDAH; desempeño laboral; desempeño tareas laborales; conductas de ciudadanía organizacional; conductas laborales contraproducentes; engagement con el trabajo

INTRODUCTION

There are dysfunctions in the workplace with various etiologies that can manifest in a subtle or conspicuous way that are not necessarily associated with a specific disability (Santuzzi et al., 2014). Among these is attention deficit and hyperactivity disorder (ADHD). ADHD was considered initially as a disorder associated to childhood only (Lange et al., 2010). It was considered that symptoms of hyperactivity, impulsivity, and attentional difficulties disappear during adolescence. However, there are studies indicating that the disorder may persist in adulthood (Brassett-Bundler & Butler, 2004; Mannuzza et al., 1993; Taylor et al., 1996; Weiss et al., 1985).

Prevalence of ADHD varies and the fluctuation is between 3% to 9% on youth and it is possible that 2% of adults comply with the diagnostic criteria (Shaffer, 1994). Results of a longitudinal study conducted in Canada suggest that two thirds of young adults maintain at least one symptom of ADHD (Weiss et al., 1985). Thus, there is evidence that young adults entering the workforce show some job performance problems (e.g., Biederman et al., 2006; Brook et al., 2013; de Graff et al., 2008; Kessler et al., 2005; Kupper et al., 2012), tend to be prone to suffer work-related accidents (e.g., Breslin & Pole, 2009), to make errors (e.g., Delisle & Braun, 2011) and to experience more stress than those without the disorder (e.g., Brook et al., 2013). Moreover, there are studies associating ADHD and manifestations of discretionary work behaviors (Halbesleben et al., 2013).

Despite the fact that people spend a lot of their wake time at work, the attention given to the effects of ADHD on job performance has been negligent (Nadeau, 2005). Similarly, studies about ADHD and

job performance are scarce in the literature; moreover, in Puerto Rico does not exist research in which the ADHD and job performance have been investigated. Thereby, people with ADHD at work is an important subject to psychologists and human resources professional due to its organizational implications since they might impact adversely the effectiveness and efficiency of production. In addition, careers of people with ADHD may be affected because their symptoms may deteriorate their job performance and this may implicate organizational costs due to more lost work days (e.g., de Graff et al., 2008), use of medical insurance (e.g., Hodgkins et al., 2011) and incrementing the cost of this medical insurances (e.g., de Graff et al., 2008).

Therefore, the purpose of the current study is to examine the relationship between ADHD and job performance. Also, we want to examine how work engagement and gender relate to job performance. Moreover, we want to examine the mediating role of work engagement and the moderating role of gender between ADHD and job performance (see research model & hypotheses proposed on Figure 1). To study this research model, we refer to the Job Demand-Resources model (JD-R; Demerouti et al., 2001), Conservation of Resources theory (COR; Hobfoll, 2001), and the Attentional Control theory (AC; Eysenck et al., 2007).

Theoretical Framework

Job Demands-Resources model (JD-R). According to Bakker and Demerouti (2007), JD-R model assumes that whereas every occupation may have its own specific risk factors associated with job stress,

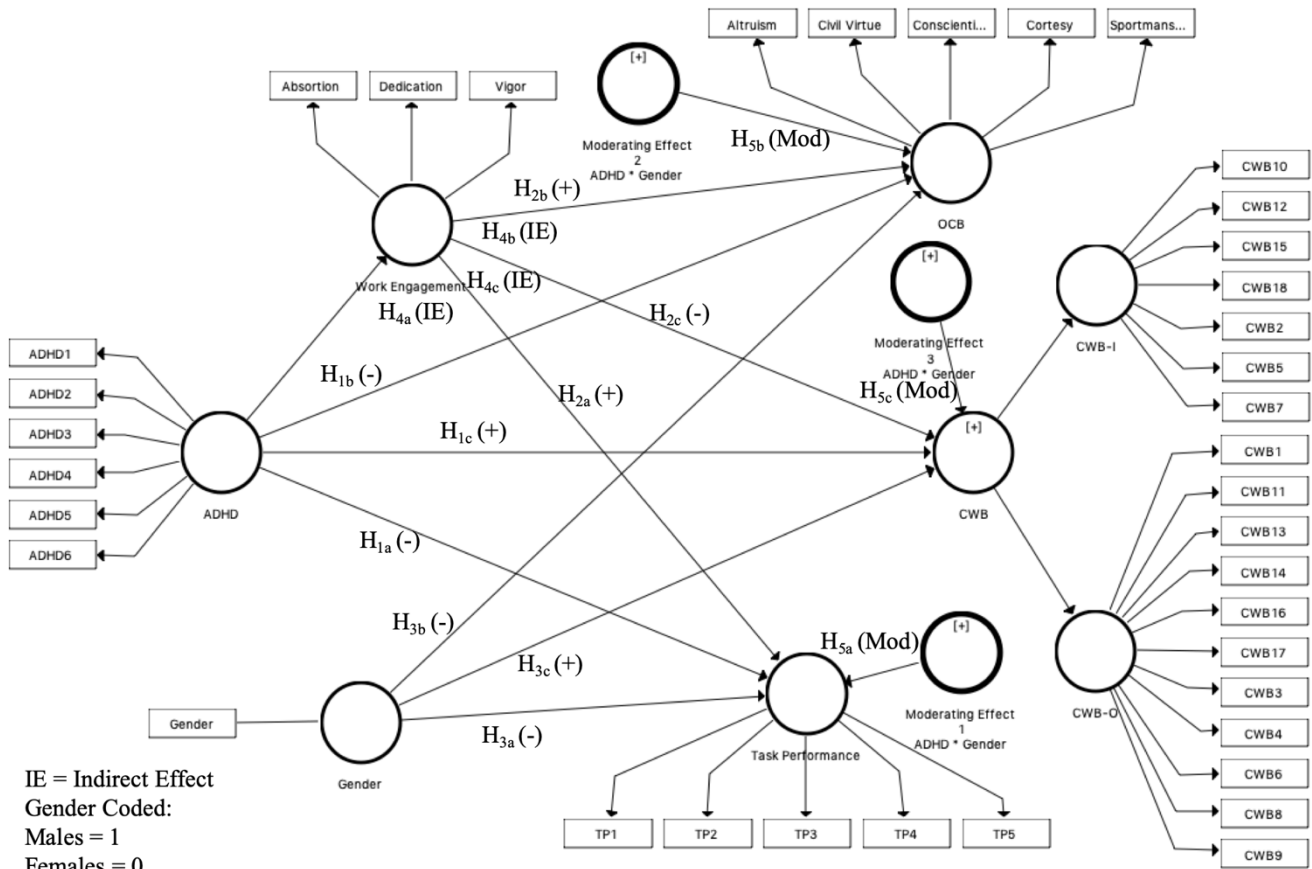


Figure 1. Research model and hypotheses proposed.

these factors can be classified in two general categories (i.e., job demands & job resources), thus constituting an overarching model that may be applied to various occupational settings, irrespective of the particular demands and resources involved. Job demands, which tend to be perceived as negative, refer to those physical, psychological, social, or organizational aspects of the job that require sustained physical, and/or psychological (cognitive & emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs. On the other hand, job resources refer to those physical, psychological, social, or organizational aspects of the job that are either/or functional in achieving work goals, reduce job demands and the associated physiological and psychological costs, and stimulate personal growth, learning, and development. The JD-R model simplicity and parsimony is reflected in the fact that it is capable of being applied in any type of occupation by simply evaluating the demands-resources binomial of those occupations that are intended to evaluate. Nevertheless, this simplicity does not mean that the model cannot be exhaustive because it allows to

evaluate job demands and job resources in all its complexity, considering different levels of analyses.

Conservation of Resources Theory (COR). The COR model of Hobfoll (2001) states that the prime human motivation is directed towards the maintenance and accumulation of resources. Accordingly, resources are valued in their own right or because they are means to the achievement or protection of other valued resources. Job resources may be located at the level of the organization at large (e.g., pay, career, opportunities, job security), the interpersonal and social relations (e.g., supervisor & co-worker support, team climate), the organization of work (e.g., role clarity, participation in decision making), and at the level of the task (e.g., skill variety, task identity, task significance, autonomy, performance feedback). From this perspective, ADHD may be considered as a loss of resources.

Attentional Control Theory (AC). The AC theory proposes that conditions that create inattention, such as ADHD, create performance deficiencies on job performance (Eysenck et al., 2007). In a workplace setting, this suggests that those with ADHD should

perform at lower levels compared with colleagues (Kessler et al., 2009). Of greater interest, however, is understanding why this happens. We extend the literature by suggesting that the poor job performance with which those with ADHD use their resources helps explain their poorer job performance. The symptoms of ADHD suggest that it may negatively impact an employee's ability to optimally allocate, direct, or invest attentional resources into meeting the work demands.

Literature Review and Hypotheses

Attention Deficit and Hyperactivity Disorder (ADHD). ADHD was typically seen as a childhood-related condition and it was believed that as one grew up it was left behind; however, there are clinical as well as epidemiological studies that identify ADHD as a persistent condition in adulthood for a large part of that minority (Faraone et al., 2000; Spencer et al., 1998; Wilens et al., 2002; Wilens & Dodson, 2004). For example, in a representative sample from the United States, Kessler et al. (2006) estimated that 4.4% of adults have ADHD. These authors go further and indicate that it is possibly conservative estimate given the social stigma associated with reporting having ADHD. Moreover, the Diagnostic and Statistical Manual of Mental Disorders DSM-5 (APA; American Psychiatric Association, 2013) estimates that 2.5% of adults in the population of most cultures have ADHD.

ADHD is a neuropsychiatric disorder commonly diagnosed in childhood associated to hyperactivity, impulsivity and inattention. The expression of symptoms seems to change as the disorder progresses (Bramham, Young & Morris, 2005a, 2005b: as cited on Young & Bramham, 2007; Weiss & Hechtman, 1993). Studies suggest that impulsivity and hyperactivity seem to diminish with age, but attentional problems persist beyond half of adulthood (Bramham, 2005a, 2005b: as cited on Young & Bramham, 2007). Moreover, there are studies which point out that adults with ADHD in different countries tend to be affected in a similar way in their daily functioning and that their life are impacted in terms of education and careers (e.g., Brod et al., 2012). ADHD is characterized by deficits in executive functions. As a whole, the executive functions combine the main neurocognitive, psychological, emotional, and motivational resources to self-regulate, control, plan, and direct the adaptive

behavior of the human being towards solving problems and achieving their goals. The disinhibition or lack of regulation of psychological and behavioral functions seems to be one of the core dysfunctions of ADHD.

Job Performance. Rosario-Hernández and Rovira-Millán (2014) indicate that people in organizations have a job description which indicates and specifies what are the tasks and responsibilities of the position they occupy. In addition, this job description indicates what is expected of them in the execution of their tasks. However, people can do one of three things: (1) simply do what the job description specifies; (2) go beyond what this job description specifies; and (3) to do things that go against the organization and/or the individuals in which they work. In this way and as previously established, job performance can be divided into three components that are in role/task performance, organizational citizenship behaviors (OCB), and counterproductive work behaviors (CWB). These last two behaviors are known as discretionary behaviors at work because they are not specified in the job description and the person manifests this type of behavior because he/she wants it.

The in role/task performance refers to the activities that are related to the formal role required by the job position (Borman & Motowidlo, 1997). The behaviors that comprise the performance of the work tasks are already established and central to any job position. In addition, there is a consensus about the activities that are and that are also relatively static over time (Ilgen & Hollenbeck, 1991). Meanwhile, OCB is essentially a dimension of job performance. In this way, Borman et al. (2001) indicate that OCB contribute greatly to organizational effectiveness, since they are what shape the psychological, social, and organizational contexts. Thus, Jex (2002) defines OCB as the behavior that an employee performs that is not a formal part of the job description, or overt behaviors that are not formally rewarded by the organization. According to Organ (1977, 1994), OCB can be categorized into five different types: (1) altruism, (2) courtesy, (3) sportsmanship, (4) conscientiousness, and (5) civic virtue. On the other hand, Hakstian et al. (2002) point-out that CWB has a substantial negative impact on organizational effectiveness. Spector (2006) defines CWB as those behaviors in which you cannot count on the person and that are aimed at doing harm. CWB can be divided into: interpersonal or

directed to individuals (aggressions, threats, rumors) and organizational or directed to the organization (sabotage, theft, absenteeism). Cullen and Sackett (2003) emphasize that it is necessary to distinguish among two types of reasons that lead to CWB. Firstly, CWB can be initiated by a person in order to satisfy some need or motivation; for example, to steal, draw attention, for some personal benefit, or for the mere fact of taking the risk. Second, CWB can be reactive since may be manifested in response to a given organizational event, whether it is a real or perceived event, such as revenge, escape, perceived injustice, breach of the psychological contract.

ADHD and Job Performance. According to Nadeau (1997), as an individual matures and leaves the school years, instead of the classroom, the workplace becomes the big challenge for people with ADHD. For example, at work individuals have to read, write, do calculations, organize and carry out projects, meet deadlines, learn new information and pay attention during conferences. Moreover, some studies (e.g., Hartmann, 1993) suggest that ADHD seems to be a problem more prevalence in these times because jobs tend to be more sedentary and require longer periods of concentration; whereas in the past the jobs were more active, requiring more hands-on activities, which was more appropriate for some people with ADHD.

Therefore, symptoms of ADHD can negatively impact job performance of employees, since it undermines their ability to distribute, direct or invest their resources to optimally meet work and organization demands (Halbesleben et al., 2013). According to Patton (2009), some key symptoms include difficulty in being able to organize, difficulty in being able to focus, difficulty in managing time and the tendency to procrastinate. While Kitchen (2006) points out that individuals employed with ADHD frequently have problems prioritizing important tasks of their jobs. In addition, adults with ADHD commonly report symptoms of impulsivity and hyperactivity (Jackson & Farugia, 1997).

Kessler et al. (2009) conducted a study with more than 10 thousand workers from different organizations in the US, finding that ADHD employees presented a reduction of 5% on their tasks performance. While Halbesleben et al. (2013) carried out a study with a total of 670 employees also in the US and found

inverse and significant correlations between ADHD and tasks performance that fluctuated between $r = -.25$ and $r = -.39$. In addition, de Graff et al. (2008) conducted a research with a sample of 7,075 employees in different countries of Europe and the US, finding that employees with ADHD lost on average 8.4 more work days, 21.7 days of decrease in the amount of work and 13.6 days in which the quality of their work diminished. On the other hand, Brook et al., (2013) carried out a longitudinal study in which were recruited adolescents with an average age of 14 years at baseline to participate until they were in average 37 years of age and were assessed at least five times in that period. At the end of the study it was found that adolescents with ADHD presented a decrease in their task's performance four times more than those without ADHD in their adulthood. According to Eysenck et al. (2007) and from the theory of attentional control, those employees with difficulty controlling their attention associated with ADHD, have lower quality in their job performance than those do not. This is explained because the processes that guide goal-directed behaviors are underdeveloped or impaired (Derakshan & Eysenck, 2009; Eysenck & Derakshan, 2011).

Literature about ADHD and OCB is scarce. The only study found was the one of Halbesleben et al. (2013) and they obtained negative correlations between ADHD and OCB that fluctuated between $r = -.14$ and $r = -.29$. According to the theory of attentional control, those employees with ADHD have difficulties with their attentional control in comparison with those employees who do not have ADHD; and therefore, their job performance might be poor. Thus, employees with ADHD get distracted easily with stimulus from the environment that are not related with their work tasks requirements and in this way may deviate their attention to irrelevant tasks (Derakshan & Eysenck, 2009). Moreover, employees with ADHD might deviate their resources to tasks that are less likely to contribute to their task's performance. Given that OCB, by definition, is not a formal part of task performance although beneficial for the organization (Bateman & Organ, 1983; Organ, 1988). Thus, OCB might be considered irrelevant without meaning that they are not important (Halbesleben et al., 2013). According to Bergeron (2007), employees with ADHD show more OCB at the expense of performing in role tasks expected of them. In addition, the opportunity

to help others in the organization is attractive because is rapidly recognized and reciprocated in comparison to periodic job/task performance evaluation (Halbesleben et al., 2013).

ADHD can affect job performance in relation to its social functioning, health and safety (Able et al., 2007; Biederman et al., 2006). According to Biederman et al. (2006), adults with ADHD have greater difficulty in their social and family interactions than people without ADHD. Able et al. attribute this situation to the difficulty they often present to feel adequate with peers, to interact interpersonally with their co-workers and to maintain personal relationships. In addition, Able et al. argue that adults with ADHD present interpersonal difficulties, perceive a low quality of life and emotional deregulation, while Biederman et al. indicate that these difficulties can lead them to feel little satisfaction with their family, social and professional. Moreover, there are studies (e.g., Rösler et al., 2004; Rösler et al., 2009) that indicate that adults with ADHD, men as well as women, are overrepresented in prison.

Barkley and Murphy (2010) argue that adults with ADHD experience significant occupational disabilities as a result of deficits in their executive functions, especially, on time management, organization and planning, problem solving, self-activation, and self-motivation. In terms of how ADHD affect job performance specifically, there is evidence that suggests that workers with ADHD are more likely to confront interpersonal and hostility problems that workers without the disorder (Murphy & Barkley, 1996). This, supposedly, produces a lower probability of getting along with supervisors (Barkley et al., 2008; Painter et al., 2008) and with co-workers (Barkley & Murphy, 2010). Painter et al. (2008) found that workers with ADHD may have long-term problems in making decisions about their careers, specifically, it is reported that these workers may experience confusion in decision making and anxiety in committing.

These difficulties, according to Nadeau (1997), can produce dissatisfaction with their careers, put them at risk of receiving negative job performance review and having conflicts consistently in their workplaces. The foregoing reveals how ADHD can lead to negative results in the workplace to workers who suffer from it, which could be considered as CWB. Thus, the only study found in the literature, Hulett (2013)

found a correlation of $r = .32$ in a sample of 298 workers in a variety of organizations in the US. Therefore, we found in the literature studies that suggest that people with ADHD are more likely to experience deficits that lead to negative outcomes at work (Barkley et al., 2008; Barkley & Murphy, 2010; Barkley & Murphy, 2011; Nadeau, 2005; Painter et al., 2008) and to have more conflicts in their work environments (Barkley et al., 2008; Murphy & Barkley, 1996; Nadeau, 1997; Painter et al., 2008). Considering such literature (Hulett, 2013) and as well as the evidence that impulsivity (Henle, 2005) and self-control (Restubog et al., 2011; Restubog et al., 2010), ADHD might be related to the manifestation of CWB. Drawing from the literature review on ADHD and job performance, we propose the following hypotheses:

H_{1a}: ADHD is negatively related to in role/tasks performance.

H_{1b}: ADHD is positively related to OCB.

H_{1c}: ADHD is positively related to CWB.

Work Engagement. Work engagement refers to a positive mental state that is related to work and it is characterized by vigor, dedication, and absorption (Bakker et al., 2008; Schaufeli et al., 2002). Individuals who are engaged with their work, they are in a cognitive affective state persistence in time, which is not focused on a specific object or behavior (Schaufeli et al., 2002).

According to Schaufeli et al. (2002), vigor is characterized by high energy levels while working, persistence and a strong desire to strive at work. Meanwhile, dedication is manifested in high levels of meaning through work, enthusiasm, inspiration, pride, and challenge related to the activities that is carried out. Finally, absorption involves feelings of desire to be fully concentrated and feel happy doing the job, while the person has the feeling that time “flies by” and one gets carried away by work.

Work Engagement and Job Performance. There are studies that have demonstrated that work engagement is positively related to job performance. For instance, Rich et al. (2010) conducted a study with a sample of 245 employees who work as firemen in which they examined the relationship between work engagement and task performance, finding a positive and significant correlation ($r = .35$, $p < .05$). Meanwhile Halbesleben et al. (2013) found correlations

between work engagement and task performance that fluctuated between $r = .21$ to $r = .31$. Also, Bakker and Demerouti (2009) conducted a study with a sample of Dutch employees and found that work engagement was positively related to task performance. Moreover, Halbesleben (2010) conducted a meta-analysis in which it was found a correlation of $r = .30$ between work engagement and task performance.

Kataria et al. (2013) point out that engaged employees are more willing and able to invest their positive energy into their jobs and work consonantly with organizational objectives. Kahn (1990) suggests that human beings desire the opportunity to be engaged and to contribute in a significantly manner to their arounds and when people feel they are contributing, lead them to work harder in order to contribute more. In this way, Erickson (2005) believes that employees engaged with their work are more likely to manifest OCB; for example, engaged employees tend to exhibit extra-role behaviors and to exhibit OCB toward both the organization and people on it (Bakker & Demerouti, 2009; Christian et al., 2011; Rich et al., 2010). Also, Macey and Schneider (2008) indicate that an engagement state is positively related to OCB, which contribute to the effective functioning of the organization. Employees engaged with their work exhibit more OCB because they efficiently achieve their professional goals and feel capable of executing OCB (Christian et al., 2011). Moreover, Halbesleben et al. (2013) found a positive and significant relationship between work engagement and OCB ($r = .31, p < .05$).

On the other hand, work engagement is of strong interest to employers because low work engagement leads to greater loss of productivity (Bakker & Demerouti, 2008). However, little is known about the relationship between work engagement and CWB; although there is evidence which indicate that positive emotions at work are negatively related to CWB toward the organization (Fox et al., 2001). There is a study (Sulea et al., 2012) in which it was found a negative relationship ($r = -.28, p < .05$) between work engagement and CWB. In addition, there are studies which indicate that emotional contagion infects other people in the workplace with their enthusiasm (e.g., Bakker, 2008), that could suggest that work engagement could decrease CWB. Therefore, we propose the following hypotheses:

H_{2a}: Work engagement is positively related to in role/task performance.

H_{2b}: Work engagement is positively related to OCB.

H_{2c}: Work engagement is negatively related to CWB.

Gender and Job Performance. Previous research suggest that there are not differences on job performance by gender (e.g., Ackerman et al., 2011; Kakar, 2002; Sturman & Trevor, 2001). However, Ali and Davies (2003) found that there were gender differences in job performance with females having higher output levels than males. Moreover, there is a metanalysis that found a very small ($d = -.11$; 80% credibility interval of $-.33$ to $.12$) difference, such that females tend to have a negligible higher levels of job performance (Roth et al., 2012). Similarly, in other meta-analysis study conducted by Mackey et al. (2019), they concluded that females consistently score higher than males on measures of overall job performance, task performance, objective measure of job performance, and OCB regardless of gender representation in organizations. In terms of CWB, there are studies that suggest that men engage in CWB more frequently when compared to women (e.g., Berry et al., 2007; Hershcovis et al., 2007; Smoktunowicz et al., 2015; Spector & Zhou, 2014). These studies' results suggest that gender differences in overall CWB are rather small, with men engaging in more than women only when they have certain personality characteristics or perceive high levels of job stressors. In other words, men may be more reactive than women. Further, there are studies (e.g., Cross et al., 2011) that argue that gender differences may emerge because males have greater impulsivity than females, with control being a central component of being able to refrain from engaging in CWB (Spector & Fox, 2005). Thus, we propose the following hypotheses:

H_{3a}: Gender is negatively related to task performance (females will self-assess their task performance better than males).

H_{3b}: Gender is negatively related to OCB (females will exhibit more OCB than males).

H_{3c}: Gender is positively related to CWB (males will exhibit more CWB than females).

Moderated Mediation Model. We argue that work engagement mediates the relationship between ADHD and job performance; however, these indirect effects of ADHD are moderated by the gender of the employee. We present the following literature to support our hypotheses of the mediating role of work engagement and moderating role of gender.

Mediating Role of Work Engagement. According to the JD-R model (Demerouti et al., 2001), work engagement mediates the association of personal and job resources with positive outcomes. Several authors (e.g., Ho et al., 2011; Karatepe, 2011, 2013; Saks, 2006) have found employee engagement to mediate relationships between several work and organizational factors and employee outcomes. However, review of literature does not answer the relationship between ADHD and employee performance through work engagement. This apart, how ADHD affects employee job performance via work engagement is not well elaborated; nevertheless, we argue that those employees with ADHD might excel on their work performance if they are engaged with what they do at work. Work engagement serve as a resource to those employees with ADHD. In this way, Bakker and Demerouti (2008) points out four reason why engaged employees perform better than nonengaged ones: (1) positive emotions, (2) better health, (3) ability to mobilize resources, and (4) crossover engagement. We argue that engaged employees with ADHD are more able mobilizing their resources and to keep focus on their jobs helping them to execute them because to the energy and concentration on that being engaged provide. On the other hand, employees with ADHD not engaged may lack the ability to concentrate, direct their resources efficiently and to be impulsive or being distracted at work, leading them to not perform well or to express behavior at work that are considered counterproductive. Therefore, we propose the following hypotheses:

H_{4a}: Work engagement mediates the relationship between ADHD and in role/task performance.

H_{4b}: Work engagement mediates the relationship between ADHD and OCB.

H_{4c}: Work engagement mediates the relationship between ADHD and CWB.

Moderating Role of Gender. According to the DSM-5 (APA, 2013), ADHD is more frequent in males

than in females in the general population of adults, with a ratio of 1.6 to 1. Males are more likely than females to present more hyperactivity and impulsivity symptoms, while females present primarily inattentive features. On the other hand, gender roles may have a prescriptive character, which indicate how males and females should behave (Dávila et al., 2011). In terms of gender and job performance, specifically the moderating role of gender on task performance, some literature stresses that the relationship between work-family policies and performance may differ for female workers (Harrington, 2007; Harris, 2004; Kirkwood & Tootell, 2008). For example, Medina-Garrido et al. (2019) found that gender did not moderate the relationship between work-family policies and performance. Meanwhile, Dávila et al. (2011) found that females exhibit more OCB than males and these authors argue that this results is probably because women are expected to be kind, supportive and to be interested in the well-being of others when compare to men (Heilman & Chen, 2005; Rudman & Glick, 1999). Finally, some studies have found that men tend to report doing more CWB than women (Berry et al., 2007; Hershcovis et al., 2007; Spector & Zhou, 2013). However, Spector and Zhou (2013) argue that this difference tend to be small and that men are not automatically more prone to CWB than women, but probably this difference are due to men being more reactive. This gender difference only occurs under stressful conditions, or employees who have certain personality traits that facilitate CWB. According to the literature found, we propose the following hypotheses:

H_{5a}: Gender moderates the negative direct effect of ADHD on task performance, such that the direct effect is stronger for females than for males.

H_{5b}: Gender moderates the positive direct effect of ADHD on OCB, such that this direct effect is stronger for females than for males.

H_{5c}: Gender moderates the positive direct effect of ADHD on CWB, such that this direct effect is stronger for males than for females.

METHOD

Research Design

A cross-sectional design was used to conduct the current study. In this type of design, data is collected

at one-point time and there is no manipulation of the variables (Creswell & Creswell, 2018).

Participants

A convenience sample of 448 workers participated in the current study. Participants in the study were enrolled from different private and public organizations in Puerto Rico. As presented on Table 1, the sample of the study was composed of 56.7% females and 79.1% of the sample was between 21 to 45 years of age. In terms of tenure, 63.2% had a permanent one, and 69.9% of the research participants worked for a private organization.

Measurement

Background questionnaire. We created a background questionnaire to gather information about the research participants. In this background questionnaire we asked the participants to provide information about their gender, age, tenure, marital status, among others, to enable us to describe the subjects of the study.

ADHD. To measure ADHD symptomatology, the six-item Adult Self-Report Scale-VI.I (ASRS-VI.I) Screener (Kessler et al., 2005) was used and

psychometrically improved version of the 18-item original screener (Cronbach's alpha of 0.76 for the six-item and 0.58 for the 18-item scale, respectively). The six-items focus on attentional/overactive themes (e.g., "How often do you have difficulty wrapping up the final details of a project, once the challenging parts have been done?"). Answers on a five-point scale (*Never* = 0, ranging to *Very Often* = 5) are scored. A score of four or more "sometimes"/"often"/"very often" options out of the total of six questions defines adult ADHD. The ASRS is freely available on the internet.

Work engagement. We used the Utrecht Work Engagement Scale (UWES; Schaufeli & Bakker, 2003; Schaufeli et al., 2002). The UWES is comprised of 17 items measured on a seven-point Likert scale anchored by the response options 0 = *never* and 6 = *always*. Six items comprised the vigor subscale (e.g., "At my work, I feel busting with energy"). Dedication was measured with five items (e.g., "I find the work that I do full of meaning and purpose"). Finally, the remaining six items comprised the absorption subscale (e.g., "Times flies when I'm working"). Reliability, using Cronbach's alpha, of the scale and its subscales has been reported to fluctuate within .82 to .93 (Schaufeli & Bakker, 2003). Several studies have used the scale with

Table 1
Sample sociodemographic characteristics.

Variable	n	%	Variable	n	%
Gender			Tenure		
Males	137	30.6	Permanent	283	63.2
Females	254	56.7	Temporary	157	35.0
Age (In years)			Years Working		
21-25	145	32.4	1-5	181	40.4
26-30	60	13.4	6-10	61	13.6
31-35	35	7.8	7-15	66	14.7
36-40	51	11.4	16-20	42	9.4
41-45	63	14.1	21-25	53	11.8
46-50	32	7.1	26-30	21	4.7
51-55	30	6.7	≥31	17	3.8
56-60	18	4.0	Type of Organization		
61-65	7	1.6	Public-State	95	21.2
≥66	4	.9	Public-Federal	29	6.5
Marital Status			Private	313	69.9
Single	212	47.3	Previously Diagnosed with ADHD		
Married	160	35.7	Yes	15	3.3
Widowed	6	1.3	No	430	96.0
Divorced	38	8.5	Risk of ADHD		
Living Together	27	6.0	Low	220	49.1
Type of Position			Moderate	144	32.1
Management	75	16.7	High	84	18.8
Non-Management	362	80.8			

Note: N = 448.

samples of Puerto Rican employees and their results support the internal structure and its reliability fluctuating within .81 to .93 using Cronbach's alpha (e.g., Martínez-Alvarado et al., 2017; Rodríguez-Montalbán et al., 2011).

Task performance. To measure task performance, we used the Task Performance Self-Report Scale developed by Rosario-Hernández and Rovira-Millán for the current study. This scale consists of five-items (e.g., *"I adequately complete the tasks that correspond to me as part of my work obligations"*) that are answered on a scale ranging from 1 to 5 (*Never to Always*). To establish the internal structure of the scale, the authors subjected it to both exploratory and confirmatory factor analysis using the structural equation model and they confirmed its unidimensional structure. The authors report that the scale obtained a reliability coefficient using Cronbach's alpha technique equal to .83.

Organizational citizenship behaviors. The Organizational Citizenship Scale developed by Rosario-Hernández and Rovira-Millán (2004) was used. It was developed using a six-point Likert scale, where 1 means *"Totally Disagree"* and 6, *"Totally Agree."* The scale consists of 23 items, which are divided into seven items each for the subscales of altruism (e.g., *"I gladly help colleagues who have problems related to work"*) and civil virtue (e.g., *"I attend activities that are not required by my work, but help the image of the organization"*); and three items each for the subscales of conscientiousness (e.g., *"I take time from work to do some of my personal things"*), courtesy (e.g., *"I ask my co-workers how they are doing with the different tasks in case they need my help"*), and sportsmanship (e.g., *"I think it's stupid to be complaining about any situation at work"*). The validity of the scale is supported by several factor analyzes. In addition, the reliability of the scale and its subscales examined through Cronbach's alpha fluctuates between .61 to .85.

Counterproductive work behaviors. To measure the counterproductive work behaviors, we used the Counterproductive Work Behavior Index developed by Rosario-Hernández and Rovira-Millán (2008), which has two subscales: (1) interpersonal CWB (e.g., *"I have verbally offended some co-worker"*) and (2) organizational CWB (e.g., *"I sabotaged some operation in my work"*). This instrument is answered in a Likert scale format ranging from 1 to 5, where 1 means *"Never"*

and 5, *"Always"*. The reliability coefficient of this instrument is .89. Alpha for the subscales are .85 for the dimensions of interpersonal counterproductive work behaviors and .87 for the dimension of organizational counterproductive work behaviors. Construct validity is supported by several factor analyzes which support the internal structure of two factors, one for interpersonal CWB and another for organizational CWB.

Procedures

The research proposal was submitted to the Institutional Review Board (IRB) of the Ponce Health Sciences University and it was approved on May 22, 2013 with the protocol number 130520-ER. Participants were contacted from different organizations and were invited to participate in the study. All those who agreed to participate in the study were explained the purpose of the research. They were given the consent form, background data sheet and the study questionnaires. The questionnaires were administered individually as well as in groups by the researchers at the different organizations contacted.

Data Analysis

For data analysis, partial least squares structural equation modeling (PLS-SEM) was used following the two-step procedure suggested by Hair et al. (2017). First, confirmatory factor analysis aimed to assess the measuring model; and secondly, evaluation of the structural model. Also, we examine the mediating effect of work engagement and the moderating effect of gender provide by the SMART-PLS program (Ringle et al., 2015). In order to examine the simple slopes of those significant moderation results, we used the PROCESS for SPSS v2.11 (Hayes, 2013) and for the interpretation of moderation results, we graphed them using ModGraph-I (Jose, 2013). It is important to mention the three reasons for the use of PLS-SEM in the present study, as Chin (2010) points out, first, that PLS-SEM has a soft distributional assumption and given that the Kolmogorok-Smirnov and Shapiro-Wilks tests were significant suggesting that scores were not distributed normally. Second, the exploratory nature of the current study (Hair et al., 2011; Henseler et al., 2009; Henseler & Sarstedt, 2013), which pretend to build a theory related to ADHD and job performance. Third, the high model complexity of the study justifies the use of PLS-SEM because the model tested has work engagement as a mediator and

gender as a moderator variable (Hair et al, 2011; Henseler et al., 2009; Henseler & Sarstedt, 2013).

Little et al. (2002) recommend the use of parcels in testing structural equation modeling because result in more reliable measurement models. We, therefore, conducted our SEM analysis on a partial disaggregation model (Bagozzi & Edwards, 1998) by creating parcels of items as also recommended by Hall et al. (1999). We created parcels of items for the variables ADHD, task performance, and CWB, which were included in the model as latent factors with six, five and 18 items, respectively; in terms of CWB, it important to mention that it was measured as a second order construct having its respective dimensions with their items. Meanwhile, OCB and Work Engagement were included as latent factors with the abovementioned subscales as the indicators.

RESULTS

The research model of Figure 1 was analyzed using SMART-PLS 3.2.4, a PLS structural equation modeling tool (Ringle et al., 2015). It assesses the psychometric properties of the measurement model and estimates the parameters of the structural model. This tool enables the simultaneous analysis of up to 200 indicator variables, allowing the examination of multiple mediator variables simultaneously among latent predictor variables indicators.

Measurement Model

The data indicates that the measures are robust in terms of their internal consistency reliability as indexed by Cronbach's alpha and composite reliability. All the Cronbach's alphas and the composite reliabilities of the different measures range from .71 to .95, which exceed the recommended threshold value of .70 (Hair et al., 2017). In terms of the validity, 78.4% of items' outer loadings reached the threshold of .70 as indicated by Hair et al. (2017); however, only two items were eliminated, one from the ADHD (item 6) construct and another one from OCB (conscientiousness) in order for those constructs to reach the minimum average variance extracted (AVE) of .50 as indicated by the guidelines of Fornell and Larcker (1981), which is an indication of the convergent validity of the measures. Moreover, the elements in the matrix diagonals, representing the square roots of the AVE, are greater in all cases than the off-diagonal elements

in their corresponding row and column, supporting the discriminant validity of the scales (see Table 2).

Henseler et al. (2015) propose assessing the hetero-trait-monotrait ratio (HTMT) of the correlations to also examine discriminant validity. The HTMT approach is an estimate of what the true correlation between two constructs would be, if they were perfectly measure. A correlation between to constructs close to one indicates a lack of discriminant validity. Therefore, Henseler et al. suggest a threshold value of .90 if the path model includes constructs that are conceptually very similar. In other words, a HTMT above .90 suggest a lack of discriminant validity. Correlations between constructs appear on Table 3, all correlations are below the threshold of .90, suggesting the discriminant validity of the measures. Also, since the HTMT can serve as the basic of a statistical discriminant validity test, Henseler et al. (2015) recommend the use of bootstrapping technique to derive a bootstrap with a 95% confidence interval with 5,000 random subsamples. Thus, a confidence interval containing the value of one indicates a lack of discriminant validity. Conversely, if the value of one fall outside the interval's range, this suggests that the two constructs are empirically distinct. Since HTMT-based assessment using confidence interval relies on inferential statistics, one should primarily rely on this criterion. In the present study, none of the correlation between the constructs in the bootstrapping 95% confidence interval included the value of one; therefore, this suggests that the constructs are empirically distinct (see Table 3).

Structural Model

After the measurements were tested for validity, the structural model as provided in Figure 2, which represent the relations among the constructs assumed in the theoretical model or latent variables, was tested (see Table 4). In order to examine the structural model and as recommended by Hair et al. (2017), first, we checked the structural model for collinearity issues by examining the variance inflation factor (VIF) value of all sets of predictor constructs in the structural model. They fluctuated between 1.01 and 1.04, all VIF values are clearly below the threshold of 5; therefore, collinearity among predictor constructs is not a critical issue in the structural model (see Table 4). Also, Table 4 shows the R² values of work engagement (.032), task performance (.261), OCB (.225), and CWB

(.144), explaining 3.2%, 26.1%, 22.5%, and 14.4% of the variance, respectively. Falk and Miller (1992) suggest a value of .10 for an R-squared as minimum

satisfactory level, all endogenous latent variables possess the threshold level of R-squared values, except work engagement.

Table 2

Correlation matrix of latent variables, outer-loadings (OL), Cronbach's alpha (α), composite reliability (CR) and average variance extracted (AVE).

	ADHD	WE	TP	OCB	CWB	Item	OL	AVE	α	CR
ADHD	(.72)					ADHD1	.79	.52	.77	.84
						ADHD2	.79			
						ADHD3	.75			
						ADHD4	.76			
						ADHD5	.47			
WE	-.18	(.93)				WE-Abs	.91	.86	.92	.95
						WE-Ded	.94			
						WE-Vig	.94			
TP	-.33	.42	(.77)			TP1	.76	.60	.83	.84
						TP2	.76			
						TP3	.80			
						TP4	.75			
						TP5	.80			
OCB	-.10	.47	.31	(.74)		OCB-Alt	.76	.54	.71	.75
						OCB-Cor	.81			
						OCB-Spo	.56			
						OCB-CV	.79			
CWB	.25	-.18	-.28	-.16	(.73)	CWB1	.61	.53	.94	.95
						CWB2	.67			
						CWB3	.70			
						CWB4	.75			
						CWB5	.71			
						CWB6	.76			
						CWB7	.74			
						CWB8	.77			
						CWB9	.72			
						CWB10	.76			
						CWB11	.66			
						CWB12	.77			
						CWB13	.78			
						CWB14	.71			
						CWB15	.75			
						CWB16	.71			
						CWB17	.67			
						CWB18	.80			

Note: N = 448. Elements within parenthesis are the confidence intervals of .90 criterion of HTMT.

Table 3
Correlation proportion of heterotrait-monotrait (HTMT).

Latent Variable	1	2	3	4
1. ADHD				
2. WE	.20 [.11; .33]			
3. TP	.39 [.30; .49]	.46 [.36; .57]		
4. OCB	.15 [.10; .28]	.55 [.46; .64]	.40 [.29; .53]	
5. CWB	.28 [.17; .43]	.20 [.11; .35]	.31 [.21; .43]	.20 [.12; .35]

Note: $N = 448$. Elements within parenthesis are the confidence intervals of .90 criterion of HTMT.

Also, all Q^2 values of work engagement, task performance, OCB, and CWB are above zero (.024, .140, .108, & .064, respectively), providing support of the model's predictive relevance regarding the endogenous latent variables. The effects sizes for ADHD achieved f^2 values of .03, .09, .00, & .05 on work engagement, task performance, OCB, and CWB, respectively, which exceeds the minimum threshold of .02, except for OCB (Chin et al., 2003). While effect sizes for gender only reached the minimum threshold on task performance. Finally, the interaction term between ADHD and gender well exceeded the minimum threshold on CWB (.07) and this is important because the effect sizes of interaction term tend to average only $f^2 = .017$ (Aguinis et al., 2005), and based on those findings, the one obtained in the current study is considered as a large one (Kenny, 2016).

Table 5 shows the structural model results and the beta values of all path coefficients are also shown. ADHD had a negative significant relation to task performance ($b = -.257, p < .001$) and work engagement ($b = -.179, p < .001$). Meanwhile, ADHD relation to OCB was a negative one, but not a significant ($b = -.012, p <$

.807). On the other hand, ADHD had a positive and significant relation to CWB ($beta = .208, p < .002$). In terms of the direct effects of work engagement on job performance, work engagement had a positive and significant relation to task performance and OCB ($b = .371, p < .001$ & $b = .463, p < .001$, respectively) and a negative and significant relation to CWB ($b = -.153, p < .018$). Finally, gender had a negative and significant relation to task performance and OCB ($b = -.134, p < .009$ & $-.084, p < .018$, respectively) as predicted. However, gender had a positive but not a significant relation to CWB ($b = .055, p < .280$).

On Table 6 we can appreciate that work engagement mediated the relation between ADHD and task performance and OCB. The indirect effects of work engagement on the relationship between ADHD and task performance was negative and significant (IE = $-.067$). Also, the indirect effect of work engagement on the relationship between ADHD and OCB was negative and significant (IE = $-.083$). However, work engagement did not mediate the relationship between ADHD and CWB (IE = $.028$).

Table 4
Results of the structural model.

Variable	R^2	Adj. R^2	f^2				Q^2	VIF
			WE	TP	OCB	CWB		
ADHD			.03	.09	.00	.05		1.04
Gender			.00	.02	.01	.00		1.02
ADHD * Gender				.00	.00	.07		1.01
WE	.032	.030		.18	.27	.03	.024	1.03
TP	.261	.254					.140	
OCB	.225	.218					.108	
CWB	.144	.138					.064	

Note: $N = 448$. VIF = Variance Inflation Factor.

On the other hand, we found that gender only significantly moderated the relation between ADHD and CWB ($b = .229, p = .015$, see Table 7). Simple slopes were plotted for values of males and females, as shown in Figure 2. Post hoc analyses were conducted to determine whether the slope of each regression line differed significantly from zero. Results of post hoc

probing revealed that the simple slopes for females ($b = .283, 95\% \text{ CI } [.083, .483], t = 2.78, p < .01$) and males ($b = .984, 95\% \text{ CI } [.682, 1.186], t = 7.72, p < .001$) were all significantly different from zero (see Figure 2). Thus, males were more strongly to show CWB under high levels of ADHD symptomatology than females.

Table 5

Hypotheses, results, and conclusions of direct effects.

	Path	beta value	SE	t-value	p-value	CIBC		Supported
						2.5%	97.5%	
Hypothesis 1								
H1a:	ADHD → TP	-.257	.041	6.25	.000	-.331	-.166	Yes
H1b:	ADHD → OCB	-.012	.050	0.245	.807	-.111	.084	No
H1c:	ADHD → CWB	.208	.066	3.17	.002	.079	.335	Yes
Hypothesis 2								
H2a:	WE → TP	.371	.047	7.87	.000	.276	.462	Yes
H2b:	WE → OCB	.463	.039	12.01	.000	.386	.536	Yes
H2c:	WE → CWB	-.153	.065	2.37	.018	-.288	-.037	Yes
Hypothesis 3								
H3a:	Gender → TP	-.134	.052	2.60	.009	-.235	-.035	Yes
H3b:	Gender → OCB	-.084	.039	2.13	.033	-.161	-.008	Yes
H3c:	Gender → CWB	.055	.051	1.08	.280	-.037	.164	No

Note: $N = 448$. * = $p < .05$, ** = $p < .01$, *** = $p < .001$; CIBC = Confidence Interval Bias Corrected.

Table 6

Indirect effect hypotheses, results, conclusion, and type of mediation.

	Path	IE	SE	t-value	p-value	CIBC		Supported	Mediation Type
						2.5%	97.5%		
Hypothesis 4									
H4a:	ADHD → WE → TP	-.067	.021	3.22	.001	-.109	-.028	Yes	Competitive
H4b:	ADHD → WE → OCB	-.083	.025	3.31	.001	-.132	-.034	Yes	Competitive
H4c:	ADHD → WE → CWB	.028	.016	1.71	.088	-.006	.068	No	N/A

Note: $N = 448$. CIBC = Confidence Interval Bias Corrected.

Table 7*Moderating effect results of gender on the relationship between ADHD and job performance.*

	Path	IE	SE	t-value	p-value	CIBC		Supported	Mediation Type
						2.5%	97.5%		
Hypothesis 4									
H _{4a} :	ADHD → WE → TP	-.067	.021	3.22	.001	-.109	-.028	Yes	Competitive
H _{4b} :	ADHD → WE → OCB	-.083	.025	3.31	.001	-.132	-.034	Yes	Competitive
H _{4c} :	ADHD → WE → CWB	.028	.016	1.71	.088	-.006	.068	No	N/A

Note: N = 448. CIBC = Confidence Interval Bias Corrected.

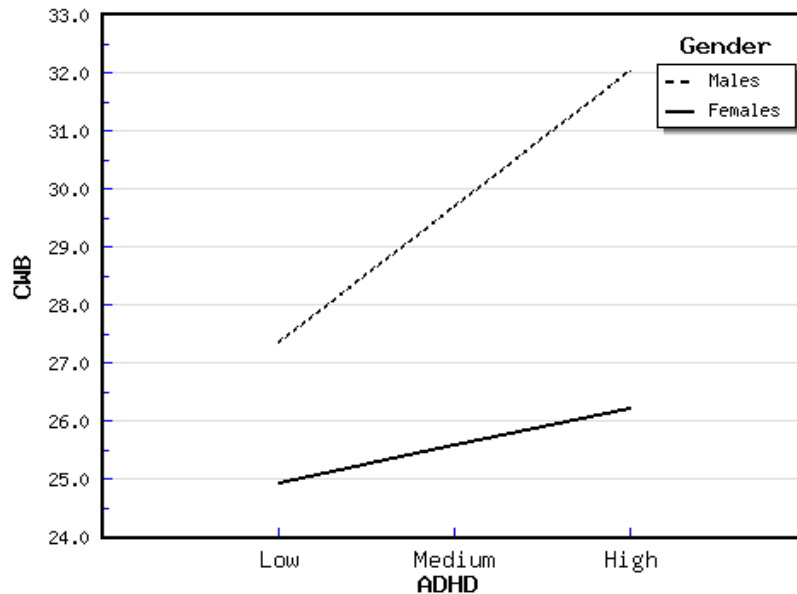


Figure 2. Interaction between ADHD and gender on CWB.

DISCUSSION

The aims of the current study were to examine the relationship between ADHD and job performance and how this relation was mediated by work engagement and moderated by gender. Specifically, the first hypotheses pretended to examine the direct effects of ADHD on job performance; thus, results suggest that ADHD has an effect on task performance and CWB, but none on OCB. The greater impact of ADHD on job performance was on the dimension of task performance. Therefore, this results suggest that the more symptoms of ADHD are manifested in the workplace, task performance tends to decrease or tend to be reduced, as suggested by some of the literature (e.g., Brook et al., 2013; de Graff et al., 2008; Halbesleben et al., 2013; Kessler et al., 2009). In this way, these results

may be explain using the perspective of the theory of attentional control, which indicates that people with ADHD have difficulties in controlling their attention performing at lower levels than people without ADHD (Eysenck et al., 2007). Furthermore, some of the literature (Derakshan & Eysenck, 2009; Eysenck & Derakshan, 2011) suggests that poor job performance may be due to the processes used to reduce the behaviors leading to the achievement of goals. Moreover, ADHD can be considered a loss of resource as the COR theory suggests because when people lose resources they are likely to keep losing resources (Hobfoll et al., 2018). COR theory emphasizes that at least for major stressful conditions (e.g., ADHD) it is the objective elements of a life event or cascade of events. For example, people with ADHD have deficits in their executive functions which do not allow them to

manage time properly and therefore not to comply with important deadlines at work and which in turn can lead them to have poor job performance.

In terms of the direct effects of ADHD on OCB, results suggest that ADHD does not have an effect on OCB given that this path coefficient practically does not exist and was not significant in the current study. This result differs partially from those found by some of the literature (e.g., Halbesleben et al., 2013), which found weak but significant regression coefficients on the relationship between ADHD and self-rated interpersonal OCB ($\beta = -.09$) and organizational OCB ($\beta = -.14$). However, and although apparently this is not the case in the current study, some of the literature related to the theory of attentional control (e.g., Derakshan & Eysenck, 2009; Eysenck & Derakshan, 2011) indicates that since people with ADHD have difficulty in maintaining control over attention they tend to perform poorly in their work and in the case of the manifestation of OCB could be due to the fact that they are very easily distracted from the work tasks they have at hand with other stimuli that are found in the work environment that could be irrelevant, such as the manifestation of some OCB as helping a coworker who has been absent for a couple of days to catch up with his/her work. In the same way, the results of the present study could be interpreted to the fact that the manifestation of OCB is less affected than task performance following the proposal of the theory of attentional control, since people divert their resources towards tasks that possibly do not help their task performance. Bergeron (2007) also points out that people with ADHD could manifest more OCB at the expense of their task performance and because according to Halbesleben and collaborators, they could present the opportunity to help others in the organization, since the reward is immediate and reciprocal in comparison to their yearly performance appraisal.

Meanwhile, ADHD has a direct effect on CWB. Therefore, it could be interpreted that as the symptoms of ADHD increase, CWB also increases. These results are consistent with those of Hulett (2013), who also found a positive and significant zero-order correlation between ADHD and the manifestation of CWB ($r = .32$). This could occur because people with ADHD have their executive functions with some deterioration that manifests itself in their time

management, organization, planning, problem solving, self-activation and self-motivation (Barkley & Murphy, 2010). In addition, there is literature (e.g., Able et al., 2007; Biederman et al., 2006) which indicates that adults with ADHD have greater difficulty in their social interactions and feel inadequate with their peers and, therefore, their interpersonal relationships with their coworkers tend to be difficult because of their emotional dysregulations. Further, Biederman and collaborators point out that people with ADHD tend to feel little satisfaction with their professional lives, which makes us think that it could lead them to exhibit more CWB.

On the other hand, our second hypothesis examines the relationship between work engagement and job performance. Work engagement positively and significantly related to task performance and OCB. As Halbesleben et al. (2014) have indicated, work engagement is a major construct for employee performance because employees display a positive attitude, they possess high energy level toward their work that leads them to actively intervene in their work environment. Furthermore, some researchers (Leiter & Bakker, 2010; Rich et al., 2010; Schaufeli et al., 2006) argued that work engagement, as a motivational variable, leads to high levels of job performance; especially, on the exhibition of OCB because engaged employees are perseverant, organized, and goal-oriented by being emotionally involved with their career and they feel energetic, dedicated, and absorbed at work and therefore, they are willing to put an extra effort in their job performance and OCB (Sulea et al., 2012). Likewise, in the meta-analysis of Christian, Garza, and Slaughter (2011), it was indeed shown that engagement is positively related to job performance. Employees who are affectively engaged with the organization have a sense of belongingness and higher involvement in the organizational activities. When one feels engaged at work, he or she will be more inclined to increase their job resources and job demands, to create a better suited and more challenging work environment (Bakkers, 2010; Tims et al., 2012; Tims et al., 2013). At the same time, work engagement is negatively related to CWB, which concurs with results of Sulea et al. (2012) who also found a negative relationship between work engagement and CWB. Moreover, this result supports the argument indicating that work engagement decreases CWB

(Bakker, 2008). This could be explained, as Fox et al. (2001) suggest, that positive emotions tend to relate negatively with CWB and being work engagement a positive state, engaged employees tend to exhibit less CWB. In the contrary, employees who are not engaged with their work are more likely to exhibit CWB.

Meanwhile, our third hypothesis aimed to examine the relationship between gender and job performance. Thus, gender was negatively related to task performance and OCB; in other words, females obtained slightly higher scores than males on task performance and OCB and effect size reached the minimum on task performance, but not on OCB. This is somehow consonant with some of the literature (e.g., Ali & Davies, 2003; Kidder & McLean, 2001; Lovell et al., 1999; Roth et al., 2017), which also found that females tend to obtain higher scores on task performance and OCB. It can be argued that this results may be explained because women are stereotyped as compassionate, kind, and helpful (e.g., Eagly, 1987; Heilman, 1983), researchers have predicted that women, more frequently than men, will engage in OCB related to helping others. In terms of the effects of gender on CWB, we did not find a significant relationship, which it is contrary to most of the literature that suggest that males tend to express more CWB than females (e.g., Berry et al., 2007; Hershcovis et al., 2007; Smoktunowicz et al., 2015; Spector & Zhou, 2014) due probably to their impulsivity and gender roles stereotypes (e.g., Eagly & Stephan, 1986; Ellis, 1991; MacCoby & Jacklin, 1974, 1980; Spector, 2012). Moreover, men tend to react to perceived organizational injustice more than women (e.g., Spector & Zhou, 2014); but apparently this was not the case in the current study.

In terms of the moderated mediation model, this was not supported by our findings. However, work engagement mediated the relationship between ADHD and task performance/OCB. The indirect effect of work engagement on these relationships reduces the impact of ADHD on task performance and OCB. These results are consonant with the JD-R model (Bakker & Demerouti, 2007) that argues that work engagement serves as a resource to employees, in this case to those with ADHD. Thus, it is seemed that those employees with ADHD may excel on the execution on their task and extra-role performance

via work engagement suggesting that employees with the condition can perform effectively when engaged with their job because they can mobilize their resources more efficiently. On the other hand, work engagement did not mediate the relationship between ADHD and CWB, suggesting this result that ADHD has practically a total direct effect on CWB and being or not engaged has nothing to do with the manifestation of CWB. Thus, possible explanation to this result is that people with ADHD are more likely to experience deficits in their executive functions that lead to negative outcomes at work (Barkley et al., 2008; Barkley & Murphy, 2010; Barkley & Murphy, 2011; Nadeau, 2005; Painter et al., 2008) and to have more conflicts in their work environments (Barkley et al., 2008; Murphy & Barkley, 1996; Nadeau, 1997; Painter et al., 2008).

Finally, gender only moderated the relationship between ADHD and CWB; in this way, gender alone did not have a significant direct effect on CWB, but the interaction of gender and ADHD did. This result suggests that males with higher ADHD symptomatology significantly exhibit more CWB than females high on ADHD symptomatology. This is consonant with the DSM-5 (APA, 2013), which argue that males are more prevalent on ADHD than females; therefore, the chance that males exhibit more hyperactivity and impulsivity symptoms are also related to the expression of CWB due to their inability to control their impulses, while females present primarily inattentive features. On the other hand, gender roles may have a prescriptive character, which indicate how males and females should behave (Dávila et al., 2011).

Theoretical and Practical Implications

The present research has both theoretical and practical implications. From the theoretical perspective, this research contributes in the existing body of knowledge related to the effects of ADHD on job performance. There is a lack of empirical research on the path leading towards job performance from ADHD through work engagement. However, the present study attempted to fill this gap by designing and empirically testing the model showing path beginning from ADHD to work engagement and further leading to job performance. Also, the present study contributes to the Latin American literature of the effect of

ADHD on job performance and the use of the theory of attention control in the branch of occupational health psychology, and the use of the COR theory and JD-R model to understand the effects of ADHD on job performance. The possible application and extension of the theory of attention control in occupational health psychology could help explain certain conditions that people bring to their workplaces, such as ADHD, and that had usually been studied in a context of laboratory and not in a natural environment. This research also contributes to the fact that ADHD seems to be a prevalent and underdiagnosed condition (Kessler et al., 2006), which suggests that there are a large number of employees who suffer from it and the current study support this argument since only 3.3% (15) stated that they have been previously diagnosed with ADHD, but according to the ASRS-VI screener results, 18.8% (84) shown high risk symptomatology of ADHD. Also, results of this research contribute to the ADHD literature and workplaces as they tend to suggest that people with ADHD might face having negative consequences in the workplace. As Halbesleben et al. (2013) indicate, people with ADHD may have the necessary resources to perform in the performance of their tasks, but they are not in a position to handle them properly that leads them to perform at high levels.

In terms of practical implications, our results suggest that employees with ADHD might have difficulties when performing their job. We agree with Patton (2009) who points out that the first thing that should be done with employees with ADHD is to guide human resources managers about the implications of ADHD in the workplace given that many human resource professionals do not know how to handle the condition of ADHD and that they should handle the condition as they handle any other condition in the workplace. Organizations can provide possible reasonable accommodations, such as providing time management tools, and providing both oral and written instructions to help people (Tominey et al., 2001). In addition, there are some evidence which support the use of cognitive assistive technology for employees with ADHD, which will help employees with ADHD in planning and organizing work activities; for example, Lindstedt and Umb-Carlsson (2013) found that these devices shown positive effects at the workplace. Also, the results of the current study

suggest that work engagement mediates the relationship between ADHD and task performance/OCB; in other words, employees with ADHD who are engaged with their work tend to perform well. Therefore, we recommend establishing work engagement programs to enhance job performance on employees with ADHD as well as employees without the condition since most literature support the positive relationship between work engagement and job performance (e.g., Bakker & Demerouti, 2009; Halbesleben, 2010; Halbesleben et al., 2013; Rich et al., 2010). On the other hand, few organizations offer reasonable accommodation to people with ADHD due in part to the fact that they do not know they have the disorder (Patton, 2009). Further, human resource professionals are warned not to take the results obtained in this study that people with ADHD perform inferiorly and thus think that they do not have to accommodate them or worse not to hire them or discriminate them. Finally and in terms of occupational counseling, Nadeau (2005) recommends that you should consider conducting a clinical interview to assess work history and their current functioning at work, do a neurocognitive evaluation to measure strengths and skills to develop, do psychological evaluations to auscultate possible comorbid or psychopathological conditions, make a personality measurement to assess temperament and values related to their career and measure vocational interests to assess the fit between the selected career and their interests.

Limitations and Directions for Future Research

This study presents several limitations that need to be considered when interpreting its results. First, being this a cross-sectional research design all data was collected on a one-time frame and there was not manipulation of any of the variables; therefore, it is not possible to establish cause-and-effect. Thus, in future research is recommended the use of longitudinal research design to examine the effects of ADHD on job performance through time. Secondly, this was a convenience sample of employees from different organizations and variety of occupations; therefore, we cannot generalize the results to the population of employees in Puerto Rico. In this way, it is necessary to examine the effects of ADHD on job performance in larger and more varied samples of employees in Puerto Rico to examine if these results are sustained. Third, the use of self-reports may be problematic

since can positively skew results on CWB and negatively skew them on task performance and OCB (Fox et al., 2001). Nevertheless, we concur with Fox and Spector (1999) that the main focus was on affective and behavioral responses based on perception, the collection of data with anonymous self-report questionnaires provide the best available approximation of these relationships due to ethical issues since they do not put the participants at risk given the difficulty of admitting CWB. However, we recommend for future research to obtain other sources of job performance such as supervisor, co-workers, and more objective measures of performance. Finally, the work context was not examined, so people with ADHD can perform well in a business environment or in which they have to work at a rapid pace (Arnst, 2003; Carrol & Ponteretto, 1998; Lamberg, 2003; Wyld, 1996). There are even authors (Weiss & Weiss, 2004) who argue that people with ADHD in the right work context could be addicted to work.

CONCLUSION

ADHD is a neuropsychiatric disorder which is protected under the American with Disabilities Act (ADA, 1990, 2008). The results tend to suggest that ADHD is related to poor task performance and the exhibition of CWB. Meanwhile, the moderated mediation model proposed was not supported by our findings; however, work engagement partially mediated the relationship between ADHD and task performance/OCB, but not CWB. On the other hand, gender moderated the relationship between ADHD and

CWB in which males with higher ADHD symptomatology manifested more CWB than females. In terms of theoretical implications of the present study, the use of JD-R model, COR and attentional control theories to better understand the relationship between ADHD and job performance. Meanwhile, among the practical implications it can be mentioned that ADHD should be manage as other conditions are manage in organizations, provide reasonable accommodation to those employees with ADHD, such as time management tools as well as oral and written instructions, conduct clinical interviews, neurocognitive and psychological evaluation, and vocational interest assessment to help employees with ADHD to enhance their job performance and to help them better their job careers with counseling. Finally, human resource professionals are warned not to take the results obtained in this study that people with ADHD perform inferiorly and thus think that they do not have to accommodate them.

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