How ADHD employees can be an asset to organizations: The role of creative extrinsic motivation and self-efficacy in the relationship between ADHD symptoms and workplace divergent thinking

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Abstract

While most literature focuses on the negative consequences of ADHD symptoms at work, the present study examined a potential benefit, increased divergent thinking. Based on laboratory studies, a positive relation between ADHD symptoms and workplace divergent thinking was hypothesized. Furthermore, based on motivational theories, it was predicted that creative extrinsic motivation and creative self-efficacy would moderate this relationship, where the highest degree of workplace divergent thinking would emerge when ADHD symptoms, creative extrinsic motivation and creative self-efficacy are all high. With a survey among a diverse sample of 253 employees, our findings support the predicted positive relationship between ADHD symptoms and workplace divergent thinking. Although creative extrinsic motivation and creative self-efficacy independently associated with greater workplace divergent thinking, no interaction effects were found. In short, this study contributes to the literature by being the first to show a positive relation between ADHD symptoms and workplace divergent thinking, while highlighting that the conditions that strengthen or weaken this relationship, still need to be explored. Practical implications and avenues for future research are discussed.

[Keywords] ADHD, workplace divergent thinking, creative extrinsic motivation, creative self-efficacy, expectancy theory

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Do you ever find yourself staring out the window at work? Do you ever accidentally speak over people in meetings? Or perhaps you've even had to reread an e-mail ten times because your mind kept wandering? These examples of distractibility and impulsivity at work are characteristics of attention-deficit/hyperactivity disorder (*ADHD*). Over the last few decades we have seen a wave of increased ADHD diagnoses, particularly within Western cultures (Olfson et al., 2013), marking it as one of the most prevalent neurodevelopmental disorders across the globe (Wolraich et al., 2011). Characteristics of ADHD include distractibility, hyperactivity and impulsivity (Garfield et al., 2012), and include a variety of cognitions and behaviors that are also seen within the healthy adult population (Rafi et al., 2023). For example, even if it is the case that you very often let your mind wander during meetings, this doesn't necessarily mean you have a clinical presentation of ADHD. It is normal to experience some ADHD characteristics and behaviors even when you're neurotypical. Indeed, ADHD symptoms can be seen on a spectrum, on which only the highest points warrant a diagnosis (National Institutes of Health Consensus Development Conference Report, 2000).

However, both clinical and subclinical ADHD symptoms can bring about various struggles at work, such as reduced income, decreased employee wellbeing, and decreased work performance (Biederman et al., 2006; Bolden & Fillauer, 2019; Shifrin et al., 2010; Vörös & Lukovszki, 2021). Despite the increased awareness of ADHD and the impact it has on people's lives, the stigma around ADHD persists (Godfrey et al., 2020; Thompson & Lefler, 2015). The

predominant focus on the negative aspects of ADHD is also mirrored in research, which largely examines the relationship between ADHD and undesirable work behaviors, such as passive leadership, procrastination and lower job performance (Bozionelos & Bozionelos, 2013; Carleton & Barling, 2018; Halbesleben et al., 2013; Nakai et al., 202). However, there may also be strengths to ADHD. Divergent thinking appears to hold particular promise, with several laboratory studies reporting that participants with ADHD symptoms score higher on divergent thinking tasks (Boot et al., 2017b; Brandau et al., 2007; Hoogman et al., 2020; White & Shah, 2006).

Divergent thinking can be defined as the ability to come up with a variety of new ideas based on a singular stimulus, where ideas generated are diverse and original (Guildford, 1967). This ability is increasingly crucial for organizations to thrive and prosper. To adapt to technological developments and ever-changing markets, organizations need employees that can think of new, out-of-the box products, services, and working procedures (KPMG, 2023; McKinsey & Company, 2023; Samsung SDS, 2023). In order to bolster their divergent thinking capacity, organizations could hire and retain individuals with stronger divergent thinking potential, including those scoring high on ADHD. However, there is currently no research on the relationship between ADHD and divergent thinking in the workplace. Moreover, the workplace is a complex setting, where the relationship between ADHD and divergent thinking may not be as straightforward as in laboratory studies. One factor that may be crucial to consider is the role of motivation. People with high ADHD symptoms typically have motivational deficits (Dekkers et al., 2017), by extension, workplace procrastination poses a formidable obstacle for employees with ADHD symptoms (Nakai et al., 2022). Procrastination does not fare well within working conditions, which tend to be fast-paced and complex, which can prove detrimental to creative

performance (Zhou et al., 2011). Accordingly, identifying how the positive relation between ADHD symptoms and divergent thinking at work can be facilitated is key.

Notably, motivational deficits can be reversed when employees are extrinsically motivated to engage in divergent thinking (cf. Boot et al., 2017a; Morsink et al., 2017). These creative extrinsic motivators not only enhance motivation, but also signal that creativity is desired, and therefore direct people's effort towards divergent thinking (Byron & Khazanchi, 2012). However, an increased motivation to engage in divergent thinking may not be sufficient to perform well. For this to happen, it is also needed that people believe that their efforts will result in adequate divergent thinking (e.g., Vroom, 1964). Given that people with ADHD generally have lower self-efficacy beliefs (Newark et al., 2012), this poses a formidable challenge for them in the workplace. In truth, studies have shown that the relation between creative potential and workplace creativity is weakened when people believe they are incapable of divergent thinking (de Acedo Lizarraga, 2014; Khalid & Zubair, 2014). Indeed, this so-called creative self-efficacy not only directly predicts someone's creativity, but also strengthens the link between creative extrinsic motivation and divergent thinking (Malik et al., 2014).

Therefore, the present research aims to answer the following question: To what extent and under which circumstances are ADHD symptoms linked to increased workplace divergent thinking? Based on research on ADHD, creativity and motivation, the main prediction is that the positive relation between ADHD symptoms and workplace divergent thinking emerges particularly when the workplace extrinsically motivates its employees to be creative and when someone scores high on creative self-efficacy. This prediction was tested in a cross-sectional study with self-report questionnaires. Because many adults with strong ADHD symptoms are undiagnosed, and there is evidence that subclinical ADHD also has a relationship with divergent

thinking (Ginsberg et al., 2014), we examined ADHD symptoms in the normal working population. The relevance of this research is two-fold. First and foremost, by being the first to investigate the positive outcomes of ADHD symptoms in the workplace, this study aligns with recent calls for increasing neurodiversity at the workplace (Bruyère & Colella, 2022; Krzeminska et al., 2019) and highlights the potential strengths rather than limitations of a stigmatized group. Secondly, this research allows for a deeper understanding of two factors, creative extrinsic motivation and creative self-efficacy, that may moderate the relationship between ADHD symptoms and divergent thinking. This has important implications for managerial practices such as providing creativity focused performance reviews, in order for organizations to reap the benefits from their ADHD employees' creative abilities.

Theoretical Development

(Neuro)divergent Thinking: ADHD and Divergent Thinking

ADHD is a neurodevelopmental disorder that, though often diagnosed within childhood, tends to continue into adulthood (Biederman et al., 2010). ADHD can be seen in three clinical presentations: (1) the primarily inattentive presentation, where patients mainly struggle with tasks that require a sustained focus; (2) the primarily hyperactive and impulsive presentation, where patients mainly struggle with tasks related to inhibition; and (3) the combined presentation, where both inattentive and hyperactive/impulsive symptoms are present (5th ed.; DSM-5; American Psychiatric Association, 2022). These presentations present themselves in daily activities. For example, with inattention, people with ADHD may struggle with active listening during presentations or may often come late to work. Hyperactive or impulsive manifestations in daily life include fidgeting, excessive talking, and prematurely finishing people's sentences (5th ed.; DSM-5; American Psychiatric Association, 2022). Importantly,

ADHD symptoms can be viewed on a spectrum (Rafi et al., 2023). Although a clinical diagnosis of ADHD requires severe ADHD symptoms that hinder normal functioning, there is much variability in ADHD symptoms in the normal population. In fact, the prevalence of ADHD symptoms within the healthy population has brought up various complications towards the diagnosis of ADHD (National Institutes of Health Consensus Development Conference Report, 2000), and many people who may have ADHD within the population remain undiagnosed (Ginsberg et al., 2014).

Although much of the literature on ADHD focuses on its deficits, including procrastination and lower job performance (e.g., Bozionelos & Bozionelos, 2013; Carleton & Barling, 2018), strengths have been identified as well. One fascinating finding within the literature is the positive link between ADHD symptoms and *creativity*, the creation of ideas and concepts that are both original and practical (Amabile et al., 1996). Creativity is now often being praised within organizations (e.g., McKinsey & Company, 2023), and can be measured in the workplace as *creative performance*. Creative performance is the ability to act creatively within an organizational context, by creating original ideas that can have practical benefits to the organization, such as by pitching a new product idea (Malik et al., 2014; Montag et al., 2012).

One key skill often needed to be able to reach high creative performance is *divergent thinking*. Divergent thinking is defined as the ability to come up with a variety of new ideas based on a singular stimulus, where ideas generated are diverse and original (Guildford, 1967). Having a higher divergent thinking ability manifests itself in having a more flexible mindset, viewing a problem from different angles, and therefore proposing new solutions to the organization (Zhang et al., 2020). Until now, divergent thinking is predominantly studied within laboratory settings using simplified idea generation tasks. A classic measure of divergent

thinking is the Alternate Uses Task (Guilford, 1967), in which participants are required to generate as many alternative ideas on how to use a brick as they can. Participant's divergent thinking ability is subsequently determined with three divergent thinking indicators, namely (1) *fluency*, the quantity of ideas generated; (2) *flexibility*, the ability to produce ideas from different categories and/or view a problem from different perspectives; and (3) *originality*, generating ideas that are new, different, and unique.

ADHD symptoms have been associated with a variety of creativity indicators, including creative performance and public creative achievements across different domains, such as dance, architecture, and science (Brandau et al., 2007; White & Shah, 2006; Zabelina et al., 2014). These findings may be explained by ADHDers' potential to excel at divergent thinking (Taylor et al., 2020). Several studies have highlighted that ADHD symptoms are positively associated with fluency, flexibility, and originality (e.g., Shaw & Brown, 1990; Shaw & Brown, 1991; White & Shah, 2006). This raises the question: why do ADHD symptoms provoke this increased divergent thinking ability?

It is theorized that both inattentive and impulsivity symptoms have their own unique benefits to divergent thinking (Boot et al., 2017b; Radel et al., 2015; Sio & Ormerod, 2012). For example, increased distractibility has been shown to enhance flexibility within divergent thinking (Baird et al., 2012; Carson et al., 2003; Sio & Ormerod, 2012). Boot et al. (2017b) theorize that an increased flexibility and originality in divergent thinking could be explained by defocused processing that comes with distractibility. The authors suggest that due to the inability to sustain attention during the task, those who score high on ADHD unconsciously process task-irrelevant information during the process of divergent thinking, which leads to the processing of unrelated stimuli and the expansion of their associative network. This, in turn, could potentially lead to

unlikely stimuli being linked together and therefore increasing the flexibility and originality of ideas produced. Furthermore, it is theorized that impulsivity could also promote divergent thinking, as this decreased inhibition more readily allows extraneous information to enter working memory during divergent thinking processes (Radel et al., 2015). Therefore, it follows that people with both symptoms of inattention and hyperactivity-impulsivity would have the greatest divergent thinking abilities, as they are able to engage in both unfocused information processing and tap into a larger and more unique associative network.

Although the positive link between ADHD symptoms and divergent thinking is robust in laboratory settings, both the context and simplified measurement may not reflect the complexity of divergent thinking at work. As the basis for workplace creativity, divergent thinking at work revolves around perceiving ideas and problems from unique angles and generating out-of-the box solutions to complex workplace problems (Kalargiros & Manning, 2015; Montag et al., 2012). Creative work-related problems are undoubtedly more complex to solve than those posed in laboratory tasks, as the problems are more ambiguous, there are more constraints in the available time and resources, and the needs of various stakeholders must be met (Montag et al., 2012). Therefore, whether the relationship between ADHD symptoms and divergent thinking persists when workplace divergent thinking measures are considered remains unknown. This notwithstanding, because of the increased creative potential of people who score high on ADHD, a positive relation between ADHD symptoms and workplace divergent thinking can be expected.

H1: There is a positive relationship between ADHD symptoms and workplace divergent thinking.

However, the work environment sets a whole new stage for the struggles of ADHD employees. There are often multiple projects to be done simultaneously, and ADHD employees often struggle with feeling unable to keep up with this pace and perform their best at work (Fuermaier et al., 2021; Nakai et al., 2022). Despite these struggles, support for employees with ADHD is often discarded, and is instead replaced by the stigmatization of ADHD employees which may reduce their efficacy to perform tasks in general (Kleim et al., 2009; Schmidt & DeShon, 2010; Srivastava & Singh, 2016) and may extend to divergent thinking performance (Mahmoud et al., 2021; Tan et al., 2022; Thompson & Lefler, 2015). Therefore, while placing the relationship between ADHD and divergent thinking into the bigger scope of the workplace, it is important to identify conditions that may further support ADHD employees to perform well in divergent thinking.

A Nudge in The Right Direction: Creative Extrinsic Motivation

Though ADHD employees may have an increased divergent thinking potential (Boot et al., 2017b), whether they make use of this potential is not guaranteed. Employees with ADHD struggle with working on tasks, as they tend to either report procrastination (Nakai et al., 2022), or focusing on a task more intensely than neurotypical employees, to the point they dissociate from their environment and feel as though they are under a ‘hypnotic spell’ (Hupfeld et al., 2018). This variability in effort does not fare well within working conditions, which tend to be fast-paced and complex, therefore hindering employees from reaching their ideal divergent thinking performance (Fuermaier et al., 2021; Metin et al., 2018). This difficulty in putting in a consistent effort and attention on tasks, can be explained by the motivational deficits that ADHD employees suffer from (Volkow et al., 2010).

In general, it has been shown that people with high ADHD symptoms have motivation deficits (Volkow et al., 2010), which impacts their willingness to engage in certain tasks (Modesto-Lowe et al., 2013; Vroom, 1964). For example, it has been shown that children with ADHD often require more motivation to engage in desirable behaviors in comparison to neurotypical children (Kollins et al., 2017). These findings can be explained by alterations in the mesoaccumbens dopamine (*DA*) pathway in people with ADHD. Though the DA pathway has been shown to play a crucial role in reward and motivation, positron emission tomography (*PET*) scans have shown that people who score high on ADHD have deficits with different dopamine receptors within this pathway (D2/3 respectably) (Volkow et al., 2010). As a result, this decrease in dopamine synthesis capacity, and by extension lack of motivation, may hinder ADHD employees from engaging in divergent thinking tasks at work.

It has been shown, however, that deficits in the reward pathway of ADHD can be reversed with the right external support. Employees with high ADHD may lack intrinsic motivation to perform creative tasks, but they are also more prone to get strongly motivated by rewards to complete tasks (De Zeeuw et al., 2012). Accordingly, extrinsic motivators can enhance divergent thinking in employees with ADHD symptoms by replenishing motivation deficits (cf. Boot et al., 2017a; Kollins et al., 2017). Crucially, however, it is important that the extrinsic rewards specify that creative and divergent thinking will be rewarded and not performance in general (Byron & Khazanchi, 2012; Vroom, 1964).This *creative extrinsic motivation* arises from employees being aware that creativity is valued and rewarded. Since rewards are contingent on creative performance, employees will increase their relative effort to reach these rewards through improving their performance (Eisenberger & Shanock, 2003; Vroom, 1964).

In line with this, laboratory studies have shown that providing creative extrinsic motivators, such as rewards for original thinking, strengthens the positive relationship between ADHD and divergent thinking. For example, Boot et al. (2017a) researched the impact of competition in the relationship between ADHD and divergent thinking. Using an experimental design, participants within extrinsic motivation trials were told that if they would generate more original ideas than another participant, they would receive a monetary reward. The findings showed that participants with ADHD scored higher in originality than those without ADHD, but only when presented with creative extrinsic motivation through rewards.

Therefore, considering the positive relationship creative extrinsic motivation has on the engagement in creative processes and its strengthening effect in the positive relationship between ADHD and divergent thinking, we propose the following hypotheses:

H2: Creative extrinsic motivation is positively related to workplace divergent thinking

H3: Creative extrinsic motivation strengthens the positive relationship between ADHD symptoms and workplace divergent thinking.

But Can We Really Do This? The Role of Creative Self-Efficacy

Although creative extrinsic motivators may increase employee's motivation to engage in divergent thinking, their efforts may be further determined by another factor that follows from Vroom's expectancy theory (1964): *self-efficacy*. Self-efficacy is defined as an individual's belief that their efforts will result in a high (divergent thinking) performance level (APA dictionary of psychology, 2023). Creative self-efficacy has been positively associated with creative performance (Dar et al., 2022; Gong et al., 2009; Haase et al., 2018) and divergent thinking

(Kharkhurin, 2017). In addition, as posited by Vroom's Expectancy Theory (1964), it is shown in both the correlational and case literatures that there is an interaction effect, where creative self-efficacy strengthens the relation between creative extrinsic motivation and creative thinking (Byron & Khazanchi, 2012; Fourie & Dreyer, 2022; Malik et al., 2014; Tierney & Farmer, 2011). More specifically, it has been shown that creative self-efficacy strengthens the positive relationship between creative extrinsic motivation and divergent thinking (Byron & Khazanchi, 2012; Malik et al., 2014).

Earlier, we argued that ADHD symptoms bolster someone's potential for divergent thinking. Here, we argue that whether this potential is realized may depend on both creative extrinsic motivation and creative self-efficacy. Accordingly, alongside main and two-way interactions, we predict a three-way interaction in which the highest divergent thinking emerges when both creative extrinsic motivation, creative self-efficacy, and ADHD symptoms are high (also see Figure 1).

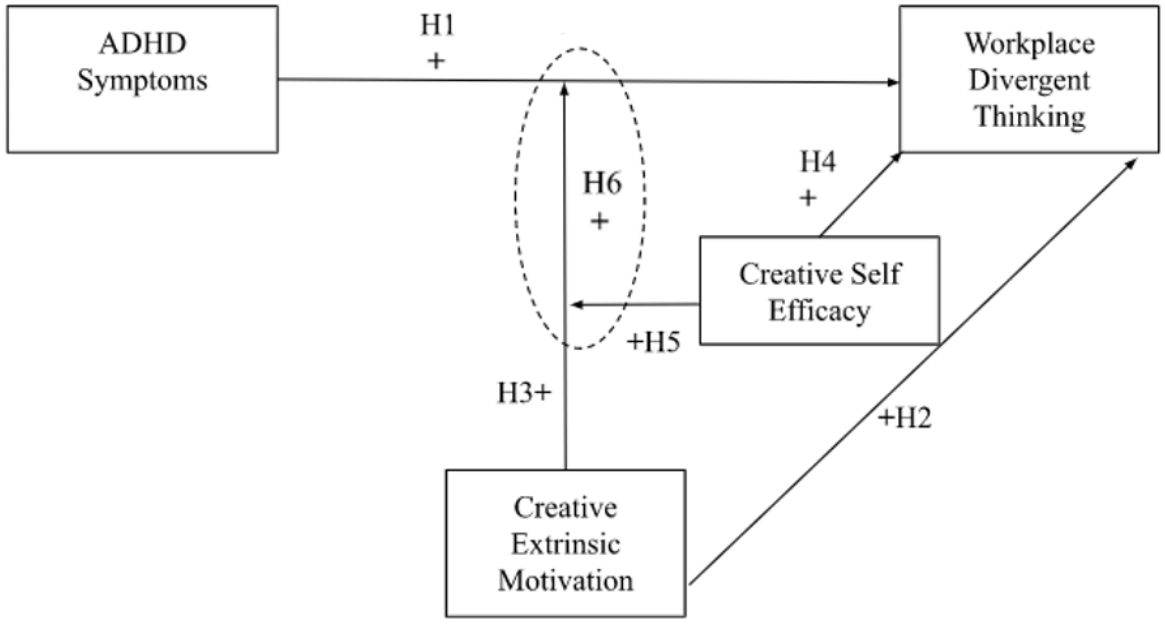
H4: There is a positive relationship between creative self-efficacy and workplace divergent thinking.

H5: Creative self-efficacy strengthens the positive relationship between creative extrinsic motivation and workplace divergent thinking.

H6: There is a three way interaction between ADHD symptoms, creative extrinsic motivation and creative self-efficacy on workplace divergent thinking, in which the highest workplace divergent thinking occurs when creative extrinsic motivation, creative self-efficacy and ADHD are high.

Figure 1.

Conceptual Model of the Role of Creative Extrinsic Motivation and Creative Self-Efficacy in the Relation Between ADHD Symptoms and Workplace Divergent Thinking.



Methods

Sample Characteristics

This study used a correlational design using online questionnaires. Employees from all levels within organizations were invited to participate in the research, provided that they worked at least 19 hours per week. G*Power analyses (Faul et al., 2009) using an estimated effect size of $d = 0.21$, based on previous research within the field (cf. Byron & Khazanchi, 2012; White & Shah, 2016), showed that with an alpha level of .05 and seven predictors[1], to reach the desired statistical power of .80, the sample size needed would be 295. Participants were recruited via convenience sampling in which people from our network received a short description about the

[1] ADHD, Creative extrinsic motivation, Creative self-efficacy, Working Hours, Work Experience, Gender, and Perceived creative work requirements.

broad relevance of the study. Snowball sampling techniques (Emerson, 2015) were also implemented in which we asked people from our network to pass our research forward to their own network. In total, we received 355 responses to the survey. From those responses, 75 participants failed to complete the survey, and 27 did not meet the inclusion criteria of working at least 19 hours a week. This resulted in a final sample of 253 participants. Of these participants, 90 identified as male, 145 identified as female and 15 identified as non-binary/third gender and three preferred not to say. The mean age of the participants was 30.52 (*SD* = 10.26). Participants were from 49 different nationalities and from education levels varying from high school diploma to PhDs (see Table 1). On average, participants worked 36.67 hours a week (*SD* = 8.43), had 8.70 years of work experience (*SD* = 9.35), and worked in 24 different industries, with the most frequent industry being business, consultancy and management (17.10%). Seventy-five participants were formally diagnosed with ADHD, 173 were undiagnosed and five preferred not to say.

Table 1.

Frequencies and percentages of different education levels of respondents in our sample.

Education Level	Frequency	Percentage
High School Diploma	48	19.00%
College Degree	9	3.60%
Vocational Training	2	0.80%
Bachelor's Degree	101	39.90%
Master's Degree	81	32.00%
Professional Degree	3	1.20%
Doctorate Degree	9	3.60%

**Note: N = 253*

Procedure

Employees were informed that participation was voluntary and that they were able to withdraw from the study at any point. After participants provided their informed consent for participating in the study that was approved by the institutional review board (FMG-2993), they answered four self-report questionnaires (see Appendix A-D) and some demographic questions. The study took around 5 minutes to complete. Respondents participated voluntarily and they were not financially compensated.

Materials

ADHD

The Adult ADHD Self Report Scale (*ASRS*; Kessler et al., 2005) measures both hyperactivity and inattentive symptoms and can be used in the normal adult population. Due to previous research showing that a shortened, six-item version of the scale provides high sensitivity, specificity, convergent validity and lower floor and ceiling effects (Kessler et al., 2005), we used the shortened version of the scale. Example items for inattention include "How often do you have trouble wrapping up the fine details of a project, once the challenging parts have been done?" Items for measuring hyperactivity-impulsivity include "How often do you fidget or squirm your hands or feet when you have to sit down for a long time?" Questions were answered on a 5-point Likert scale, ranging from 1 (never) to 5 (very often). Scores were then averaged across items to reflect the strength of ADHD symptoms. The shortened ASRS had a reliability of Cronbach's $\alpha = .74$.

Workplace Divergent Thinking

Workplace divergent thinking was measured by adapting a subsection of the Runco Ideational Behavior Scale (*RIBS*; Runco, 2001). With 93 items, the RIBS examines a broad

spectrum of creative ideation indicators and related behaviors. As our research is specifically concerned with workplace divergent thinking, items were selected that focused on divergent thinking ability, while other aspects (e.g., proactivity) were removed from the scale. Furthermore, items were adapted to the workplace. The adapted and shortened RIBS scale for this study had eight items that cover the most important aspects of divergent thinking, such as fluency: "I have always been an active thinker: I have lots of ideas", flexibility: "I am good at combining ideas in ways that my coworkers have not tried" and originality: "I have many wild ideas." Answers were provided on a 5-point Likert scale ranging from 1 (never) to 5 (very often). Scores were then averaged across items to reflect the degree of workplace divergent thinking. Analyses showed the adjusted scale to have high internal consistency; Cronbach's $\alpha = .90$.

Creative Extrinsic Motivation

Creative extrinsic motivation was measured using a subsection of the creative rewards and recognition questionnaire created by Fischer and colleagues (2019). Questions about idea implementation were excluded, so that the questionnaire consisted only of items about idea generation. The shortened questionnaire consisted of five items about rewards surrounding the generation of creative ideas at work. An example item is: "Please indicate the degree to which you receive individual praise and recognition for good creative ideas." Items were answered on a 5-point Likert scale ranging from 1 (never) to 5 (very often). Scores were averaged across items to reflect the strength of creative extrinsic motivation. Analyses showed the scale to have a reliability of Cronbach's $\alpha = .76$.

Creative Self-Efficacy

Creative self-efficacy was measured using a subset of the Short Scale of Creative Self (Karwowski, 2011). The questionnaire is a self-report questionnaire consisting of 11 items, five

of which pertain to the perceived centrality of creativity, and six of which pertain to creative self-efficacy beliefs. To better fit the scope of our research, we only included the six items regarding creative self-efficacy beliefs within the study. Example items include “I am sure I can deal with problems requiring creative thinking” and “I am good at proposing original solutions to problems.” Answers were provided on a 5-point Likert scale ranging from 1 (definitely not) to 5 (definitely yes). Scores were averaged across items to reflect the strength of creative self-efficacy. Analyses showed the scale to have a high internal consistency; Cronbach's $\alpha = .79$.

Demographics and Controls

In line with previous research in the field, gender, age, and work experience were included as possible control variables within the analyses (Hirst et al., 2009; Oppi et al., 2019). Furthermore, as creative characteristics and the degree to which they are needed differ between job types and industries, we also included job industries and perceived creativity work requirements as potential control variables. Finally, because our divergent thinking measures consisted of self-report measures comparing divergent thinking to other coworkers, we included the number of coworkers as a potential control measure as well.

Results

Data Handling

Data was imported to SPSS 28, where all statistical tests were conducted using IBM Analytics 2016. Outliers were checked through generating box plots, but no outliers were detected. Prior to hypothesis testing, multicollinearity was examined using the VIF-values provided by SPSS; all VIF-values were below 10.

Descriptive Statistics and Tests for Potential Covariates

Table 2 presents descriptive statistics and Pearson correlations between ADHD, workplace divergent thinking, creative extrinsic motivation, creative self-efficacy, age, creative work requirement perceptions, working hours, work experience and number of coworkers. A significant positive relationship was found between ADHD and workplace divergent thinking, creative extrinsic motivation and workplace divergent thinking, and creative self-efficacy and workplace divergent thinking.

We then tested for potential extraneous variables to control for during the hypothesis testing. After adjusting the alpha level according to the number of predictor variables in order to not overly inflate the chances of a significant correlation (at $p = .01$; Dunn, 1961), the following variables had a significantly positive relationship with workplace divergent thinking; working hours ($r = .25$, $p < .001$), creative requirement perceptions ($r = .31$, $p < .001$), and work experience ($r = .19$, $p = .003$); no other significant correlations were observed (ps > .014). Moreover, in separate MANOVAs, we tested the effect of gender, education level, and job industry on ADHD, creative self-efficacy, creative extrinsic motivation and workplace divergent thinking. After correcting the alpha level to reduce chance capitalization (at $p = .015$), only gender had a significant multivariate effect ($F(8, 496) = 5.19$, $p < .001$); Fs < 1.66, ps > .024 for other factors. Follow-up analyses showed an effect of gender on ADHD symptoms, $F(2, 250) = 11.70$, $p < .001$ and workplace divergent thinking, $F(2, 250) = 5.37$, $p = .005$. However, a relationship between gender and creative self-efficacy, $F(2, 250) = 3.84$, $p = .023$ and creative extrinsic motivation, $F(2, 250) = 0.19$, $p = .825$ was not found. Post-hoc Tukey tests showed that participants that identified as non-binary/prefer not to say scored higher on ADHD symptoms ($M = 4.00$, $SD = 0.59$) than males ($M = 3.10$, $SD = 0.68$) and females ($M = 3.30$, $SD = 0.77$; both ps <.001), while males and females did not differ, $p = .109$. Furthermore, participants that identified

as male scored higher on workplace divergent thinking (M = 3.71, SD = 0.70) than females (M = 3.42, SD = 0.62, p = .005). Participants that identified as non-binary/prefer not to say did not differ significantly between females and males (M = 3.69, SD = 0.96, ps > .263). Therefore, working hours, creative work requirement perceptions, work experience, and gender (dummy-coded) were included as control variables for the remainder of the analyses.

Table 2.

Correlations among study variables

Variable	*M*	*SD*	1	2	3	4	5	6	7	8
1. ADHD	3.28	.75	-							
2. WDT	3.54	.69	.30**	-			.			
3. CEM	2.48	.75	.03	.30**	-					
4. CSE	4.03	.59	.10*	.63**	.20**	-				
5. Age	30.52	10.26	–.04	.15*	–.02	.14*	-			
6. Work experience	8.70	9.35	.03	.19**	–.04	.13*	.92**	-		
7. Working hours	36.66	8.43	.03	.25**	.01	.22*	.34**	.30**	-	
8. N coworkers	6.59	1.72	–.07	.03	.02	.07	.29**	.27**	.16*	-
9. PCWR	5.04	2.39	–.04	.31**	.27**	.25**	.17**	.14*	.23**	–.02

Note. WDT = workplace divergent thinking, CEM = creative extrinsic motivation, CSE = creative self-efficacy; PCWR: Perceived creative work requirements; * $p < .05$; ** $p < .01$.

ADHD Symptoms and Workplace Divergent Thinking

Our first hypothesis was that there would be a positive relationship between ADHD symptoms and workplace divergent thinking. To test the main effect between ADHD symptoms and workplace divergent thinking, a hierarchical multiple regression was performed. The first step of the regression was to include the control variables in the model, along with creative extrinsic motivation and creative self-efficacy. In the second step, ADHD was added as a predictor to the model, which explained a significant additional amount of variance ($\Delta R^2 = .06$, $F(8,244) = 32.60$, $p < .001$). The analysis showed that ADHD is a significant positive predictor of workplace divergent thinking ($B = 0.24$, SE = .04, $t(244) = 5.71$, $p < .001$, 95% CI[0.16, 0.33], $r = .34$).

Effects involving Creative Extrinsic Motivation

Our second hypothesis was that there would be a positive relationship between creative extrinsic motivation and workplace divergent thinking. Our second hypothesis was tested using a hierarchical multiple regression, controlling for our control variables, ADHD and creative self-efficacy. When examining the results, we see that when creative extrinsic motivation is added as a predictor to the model, significantly more variance in the model is explained ($\Delta R^2 = .03$, $F(8,244) = 15.31$, $p < .001$). Support was found for H2, as there was a positive relationship found between creative extrinsic motivation and workplace divergent thinking ($B = 0.17$, SE = .04, $t(244) = 3.91$, $p < .001$, 95% CI[0.08, 0.25], $r = .24$).

Our third hypothesis was that creative extrinsic motivation would strengthen the relationship between ADHD symptoms and workplace divergent thinking. Our third hypothesis was tested using a multiple regression via the PROCESS macro on SPSS using Model 1 with 5,000 bootstraps (Hayes, 2022). The interaction effect of creative extrinsic motivation and

ADHD on workplace divergent thinking was not significant (B = 0.02, SE = .05, t(244) = 0.46, p = .645, 95% CI[–0.08, 0.13]), therefore no support was found for H3.

Effects involving Creative Self Efficacy

Our fourth hypothesis was that there would be a positive relationship between creative self-efficacy and workplace divergent thinking. Hypothesis 4 was tested using a hierarchical multiple regression, in which the first step accounts for our control variables, ADHD, and creative extrinsic motivation. In the second step, we added creative self-efficacy to the model, and observed that creative self-efficacy explains a significant amount of additional variance in the model (ΔR^2 = .22, F(8,244) = 115.19, p < .001). Support was found for Hypothesis 4, as there was a positive relationship found between creative self-efficacy and workplace divergent thinking (B = 0.60, SE = 0.06, t(244) = 10.73, p < .001, 95% CI[0.49, 0.71], r = .57).

Hypothesis 5 was that creative self-efficacy would strengthen the positive relationship between creative extrinsic motivation and workplace divergent thinking. Hypothesis 5 was tested using Model 1 from the PROCESS macro, controlling for ADHD. However, in contrast to our predictions, the interaction effect of creative self-efficacy and creative extrinsic motivation on workplace divergent thinking was not significant (B = –0.05, SE = .06, t(243) = –0.77, p = .442, 95% CI[–0.17, 0.08]). Therefore, H5 was not supported.

To test the full three way interaction (Hypothesis 6), Model 3 from the PROCESS macro was run. Gender, working hours, work experience, and creativity perception were controlled for. The analyses conveyed that H6 was not supported, as the three-way interaction was statistically not significant (B = –0.01, SE = .08, t(240) = –0.10, p = .920, 95% CI[–0.17, 0.15]).

Exploratory Analyses

Is there a difference between inattentive and hyperactive symptoms in their relation with workplace divergent thinking?

After splitting the ADHD symptoms scale into two variables, hyperactive symptoms (α = .57) and inattentive symptoms (α = .76), a multiple regression was conducted to see if there were differences between the two ADHD presentations on workplace divergent thinking. In the first step of the regression model, control variables, creative extrinsic motivation, and creative self-efficacy were included. In the second step, we added the inattentive and hyperactive symptoms as separate predictors, which explained additional variance (ΔR^2 = .08, $F(9,243)$ = 21.03, $p < .001$). Both the relationship between inattentive symptoms and workplace divergent thinking (B = .02, SE = .01, $t(243)$ = 2.01, p = .046, 95% CI[0.00, 0.04], r = .13) as well as between hyperactive symptoms and workplace divergent thinking was significant and positive (B = .09, SE = .02, $t(243)$ = 5.22, $p < .001$, 95% CI[0.05, 0.12], r = .31), albeit with a stronger effect size for hyperactive symptoms.

Is there a difference between people with and without ADHD Diagnosis on workplace divergent thinking?

To compare participants with and without a formal ADHD diagnosis on their workplace divergent thinking ability an ANCOVA was conducted (omitting the participants who preferred not to say whether they were diagnosed). Control variables, creative self-efficacy and creative extrinsic motivation were added as covariates. The ANCOVA concluded that there was a significant difference between the diagnosed and undiagnosed employees on workplace divergent thinking scores (*mean difference* = 0.40, SD = 0.07, $p < .001$, 95% CI[0.27, 0.54]). When looking at the means to probe the direction of the effect, we see that people who are formally diagnosed with ADHD score higher on workplace divergent thinking (M = 3.91, SD =

0.67) than people who are undiagnosed (M = 3.36, SD = 0.62). As participants with a formal ADHD diagnosis (M = 3.92, SD = 0.56) also reported having stronger ADHD symptoms than those without the diagnosis (M = 2.99, SD = 0.66), $F(6,241) = 101.33$, $p < .001$, 95% CI[0.60, 0.96], this is in line with the finding that stronger ADHD symptoms are associated with higher workplace divergent thinking.

Redefining the relationship between ADHD & creative self-efficacy: Do we think we can?

One interesting relationship that we wanted to further explore was the positive correlation between ADHD and creative self-efficacy (see Table 2), also because people with ADHD generally report having lower self-efficacy beliefs (Newark et al., 2012). To test the relationship between ADHD and creative self-efficacy, a multiple regression was run, controlling for our control variables and creative extrinsic motivation in the first step, and adding ADHD in the second. When adding ADHD to the model, we see that a significantly larger amount of variance is explained ($\Delta R^2 = .02$, $F(7,245) = 5.42$, $p < .021$). The regression analysis shows that ADHD has a positive relationship with creative self-efficacy (B = .11, SE = .05, $t(245) = 2.33$, $p = .021$, 95% CI[0.02, 0.21], r = .15).

As we also noticed in our earlier analyses that creative self-efficacy is positively related to workplace divergent thinking (B = 0.60, SE = .06, $t(245) = 10.71$, $p < .001$, 95% CI[0.49, 0.71]), we proceeded to check whether creative self-efficacy may be a mediator rather than a moderator in the relationship between ADHD and workplace divergent thinking. Accordingly, we ran a multiple regression using PROCESS Model 4, controlling for the control variables and creative extrinsic motivation. Results show that the originally significant relationship between ADHD and workplace divergent thinking (B = 0.31, SE = .05 $t(245) = 5.81$, $p < .001$, 95% CI[0.20, 0.41]) dropped but remained significant after adding the mediator creative self-efficacy

(B = 0.24, SE = .04, t(244) = 5.71, p < .001, 95% CI[0.16, 0.33]). Furthermore, the positive relationship between creative self-efficacy and workplace divergent thinking was significant (B = 0.63, SE = .06 t(244) = 11.16, p < .001, CI[0.52, 0.74]). Finally, the indirect effect of ADHD symptoms on workplace divergent thinking through creative self-efficacy was significant as the confidence interval did not include zero (B = 0.07, SE = .03, 95% CI[0.01, 0.13]). Therefore, the exploratory analyses show that the relationship between ADHD symptoms and workplace divergent thinking is partially accounted for by creative self-efficacy.

Discussion

While most organizational psychology research focuses on the negative consequences of ADHD in the workplace (e.g., Bozionelos & Bozionelos, 2013; Carleton & Barling, 2018), our study examined a possible positive side of ADHD by being the first to test the relationship between ADHD symptoms and workplace divergent thinking and considering the moderating roles of creative extrinsic motivation and creative self-efficacy. Based on laboratory findings, we hypothesized a positive relation between ADHD symptoms and workplace divergent thinking. In addition, based on motivation theories, we hypothesized main effects and two-way interactions involving creative extrinsic motivation and creative self-efficacy, along with a three-way interaction model, where the positive relationship between ADHD symptoms and workplace divergent thinking would be maximized when both creative extrinsic motivation and creative self-efficacy are high. After analyzing the data from a varied sample of 253 employees, our results show that ADHD symptoms are indeed positively related to workplace divergent thinking. However, while both creative extrinsic motivation and creative self-efficacy positively

predicted workplace divergent thinking, there were no significant 2-way or 3-way interactions. Below, theoretical implications, study limitations and avenues for future research are discussed.

ADHD symptoms and workplace divergent thinking

Firstly, in line with our hypothesis, a positive relationship between ADHD symptoms and workplace divergent thinking was found. Although this finding is in line with previous work (e.g., Shaw & Brown, 1990; Shaw & Brown, 1991; White & Shah, 2006), this is not self-evident. Until now, studies between ADHD and divergent thinking have been conducted in the laboratory using simplified tasks such as the Alternative Uses Task (AUT; Guilford, 1967), with mainly children as participants (Hoogman et al., 2020). However, divergent thinking at work deals with more complex challenges than merely listing alternate uses for a brick, limiting the generalizability of lab findings (Montag et al., 2012). Furthermore, there are various obstacles that employees scoring high on ADHD symptoms may face at work, such as perceived stigma and procrastination (Nakia et al., 2022; Thompson & Lefler, 2015). Adding greater ecological validity to the current literature, our findings convey that the positive relationship between ADHD symptoms and divergent thinking ability generalizes to the workplace. This increases our current theoretical understanding by conveying that employees with strong ADHD symptoms excel at divergent thinking at work *despite* the obstacles they may face. Moreover, because divergent thinking is pivotal for creative achievements, our finding may explain why ADHD symptoms are associated with real-world creative achievements (White & Shah, 2006; Hoogman et al., 2020).

Furthermore, although deficits in executive function that accompany ADHD, such as inattention and hyperactivity, have been related to poorer task performance (Liao et al., 2019; Patros et al., 2019), our study shows that both inattention and hyperactivity symptoms can be

beneficial to divergent thinking performance. This is in line with Boot and colleagues' (2017b) theory that people with ADHD may perform better on divergent thinking tasks due to an expanded association network that may arise from increased distractibility and decreased inhibition. Thus, our study provides support for this theory in a new and highly salient context: the workplace.

Moreover, while previous research shows that the positive relationship between ADHD symptoms and workplace divergent thinking mainly occurs at subclinical levels of ADHD (Funk et al., 1993; Healey & Rucklidge; 2006), exploratory analyses illustrate that employees who were formally diagnosed with ADHD scored higher on workplace divergent thinking than undiagnosed employees. This broadens our current understanding of the relationship between ADHD and divergent thinking, as we see that the positive relationship is not limited to strictly subclinical presentations of ADHD. In addition, this finding suggests that the relation between ADHD symptoms and divergent thinking may be linear rather than curvilinear in nature (cf. Hoogman et al., 2020).

The Main Effects of Creative Extrinsic Motivation and Creative Self-Efficacy

In line with our hypotheses, positive main effects were found for the relation between creative extrinsic motivation and workplace divergent thinking, as well as for the relation between creative self-efficacy and workplace divergent thinking. Though these findings are in line with previous research that underlines the positive relationship between creative self-efficacy and creativity (Kharkhurin, 2017) as well as creative extrinsic motivation and creative performance (Byron & Khazanchi, 2012), our study is the first to examine the relationship between creative extrinsic motivation and creative self-efficacy with workplace divergent thinking, specifically. Therefore, since divergent thinking is an important cognitive

process that supports creative achievements in the real world (Boot et al., 2017b; Nijstad et al., 2010), our findings may shed some light on why creative extrinsic motivation and creative self-efficacy positively predict workplace creativity.

The Moderating Effects of Creative Extrinsic Motivation and Creative Self-Efficacy

Contrary to our hypotheses, we found no 2-way or 3-way interaction effects between ADHD, creative extrinsic motivation, creative self-efficacy, and workplace divergent thinking. Though these findings go against previous literature (Byron & Khazanchi, 2012; Kollins et al., 2017; Malik et al., 2014; Tierney & Farmer, 2011) as well as Vroom's expectancy theory (1964), there are possible explanations as to why we did not find these moderation effects in our study.

Though the majority of the literature highlights ADHDer's sensitivity to reward in order to motivate them to perform a task (i.e. Kollins et al., 2017), we did not find that creative extrinsic motivation at work strengthened the relation between ADHD symptoms and workplace divergent thinking. One possible explanation for this could be the difference in the motivational implications of workplace divergent thinking as opposed to externally provided divergent thinking tasks, such as the AUT. In lab experiments, participants are asked to generate ideas on a task that is not of their own choosing. On these externally provided tasks, receiving a reward for creative thinking may extrinsically motivate ADHDers to show greater divergent thinking (cf. Boot et al., 2017a). However, because employees often select their work based on their career goals and interests, according to goal content theory, employees often do work that they find intrinsically motivating (Morsink et al., 2021). Accordingly, the intrinsically motivating nature of workplace divergent thinking may weaken the need of employees with strong ADHD symptoms for extrinsic motivators to perform a task.

Additionally, it may be that extrinsic motivators play a different role in the context of AUT experiments as opposed to daily work life. In experiments involving the AUT, extrinsic motivation focuses on an immediate (monetary) reward for performing divergent thinking well (Boot et al., 2017a). However, in the more complex workplace context, it may be more ambiguous what good divergent thinking performance entails (cf. Montag et al., 2012), it may be less clear whether good performance is recognized by supervisors, nor is it likely that good performance is immediately rewarded. People with ADHD often choose whether to do a task or how much effort to invest based on the rewards they will receive immediately upon execution (Bolden & Fillauer, 2020; Grandjean et al., 2023; Sader et al., 2013; Volkow et al., 2011). As such, it may be the case that for employees with high ADHD symptoms, creative extrinsic motivators are not always beneficial at work due to the lack of immediacy in receiving the reward. In the creative extrinsic motivation measure in our study, items pertained to rewards that occur after a delayed or undefined time period, such as '[rate how likely it is to] receive a more positive year-end/mid-year review for good creative ideas.'

Although based on previous work, self-efficacy was hypothesized to be a moderator in the relation between ADHD symptoms and divergent thinking, our exploratory analyses showed that creative self-efficacy, at least in the context of our study, may act as a mediator instead. Our exploratory analyses conveyed that there is a positive relationship between ADHD and creative self-efficacy and that creative self-efficacy accounts for the relationship between ADHD symptoms and workplace divergent thinking. Though our research provides a positive outlook on the relationship between ADHD and creative self-efficacy, the literature is divided on the matter (i.e. Bussing & Metha, 2013; Evangelista et al., 2008). Though some studies accentuate that people with ADHD generally have lower self-efficacy (Newark et al., 2012), others portray that

people with ADHD have a positive illusory bias and therefore overestimate their abilities (Knouse et al., 2005). Our findings show that although employees with high ADHD symptoms scored higher on creative self-efficacy, their self-perceptions were quite accurate as they did in fact score higher on workplace divergent thinking as opposed to employees who had lower ADHD symptoms. However, it is important to recognize that both creative self-efficacy and workplace divergent thinking were based on self-report and that convenience and snowball sampling methods were used for this study, potentially tapping networks and interesting employees that score high on ADHD, function well at their (creative) work, and may advocate for more neurodiversity at work.

Lastly, when considering our entire proposed theoretical model, we did not find the anticipated three-way interaction between ADHD, creative extrinsic motivation, creative self-efficacy, and workplace divergent thinking. While greater divergent thinking is seen for employees that score high on ADHD, that are confident in their divergent thinking abilities and that receive rewards contingent on divergent thinking performance, their divergent thinking is not maximized when all factors score high. Notably, this finding is not in line with Vroom's expectancy theory, which would state that a combination of extrinsic rewards and self-efficacy would maximize work performance. However, one possible explanation that may serve to explain our absence of support for expectancy theory in our findings, is the importance of context. Vroom's expectancy theory model has been largely shown in the context of simple, repetitive work (i.e. Oladejo, & Oluwaseun, 2014). However, as our study measures complex cognitive performance (i.e. divergent thinking) within the workplace, it may be that expectancy theory is better suited for objective, easily quantifiable performance outcomes, such as number

of items shipped per day, rather than subjective and rather ambiguous outcomes, such as workplace divergent thinking.

Practical Implications

Though adults with ADHD often face unemployment (Helgesson, 2023), and when hired, are often confronted with stigmatization from their coworkers (Thompson & Lefler, 2015), our study showcases a silver lining to having high ADHD symptoms at work; increased workplace divergent thinking ability. With recent advocation for increasing neurodiversity at the workplace (Bruyère & Colella, 2022; Krzeminska et al., 2019), one managerial implication that arises from our study is to recruit more ADHD employees into organizations in order to push forward innovation practices. This may be done in practice by using a top-down approach to create a tailored neurodiversity strategy that works for the organization, such as the seven-step neurodiversity inclusion model (Hurley-Hanson et al., 2019) and thereby implement recruitment procedures that allow for the increased recruitment of ADHD talent (Rao & Polepeddi, 2019).

Furthermore, our research conveys that both creative extrinsic motivation and creative self-efficacy have a positive relationship with workplace divergent thinking. As idea generation is a critically valued trait in organizations in the current market (e.g., McKinsey & Company, 2023), our research highlights the importance of helping facilitate workplace divergent thinking through creative extrinsic motivation and creative self-efficacy in organizations. Creative extrinsic motivation was measured in our study through monetary rewards, public recognition, individual praise, positive performance reviews, and additional training opportunities. Therefore, we would suggest for organizations to experiment with implementing these motivators for workplace divergent thinking. Additionally, as research shows that self-efficacy can be trained (Mata et al., 2019; Smith et al., 2020), we would recommend organizations to implement creative

self-efficacy training. For instance, previous research has shown that personal assignments that obtain to goal setting and resource building increases self-efficacy in employees (Ouweneel, 2013). Therefore, tailoring these assignments to creative goals and building resources for creative thinking, may help increase creative-self efficacy in employees, and in turn their divergent thinking potential.

Limitations and Avenues for Future Research

One pressing limitation of our study is its methodology. As the study was completed using a cross-sectional design, causality cannot be inferred from our findings. Providing casual evidence would not only further illuminate the relationship between ADHD symptoms and workplace divergent thinking, but also showcase the direct effects that increasing creative extrinsic motivation and creative self-efficacy can have on workplace divergent thinking. However, providing causal evidence in an experimental design is far from self-explanatory, as manipulating ADHD symptoms is not possible and unethical. However, to further gauge causality, one avenue that could be explored is treatment studies with medication that suppress ADHD symptoms, in which medicated versus unmedicated ADHD groups could be compared on their workplace divergent thinking ability (cf. Baas et al., 2020; Boot et al., 2017a; Hoogman et al., 2020). These findings would then also further shed light on the implications of ADHD medication on workplace divergent thinking and would provide greater casual evidence as well as practical implications.

While the present study focuses on the factors that *bolster* the relationship between ADHD symptoms and workplace divergent thinking, we found no evidence for moderators within this relationship. It may be the case that *suppressing* factors may play a more vital role in the relationship between ADHD symptoms and workplace divergent thinking. For example,

perceived stigma in the workplace (Beaton et al., 2022; Coll & Mignonac, 2022; Masuch et al., 2018) could be a potential suppressing moderator. By focusing on bolstering moderators within the current research, our study aimed to look at potential factors that could reverse a pre-existing difficulty. However, identifying which moderators may pose a threat to the relationship between ADHD symptoms and workplace divergent thinking may be equally if not more important, in order to recommend preventive measures at work. Especially as within qualitative studies employees with ADHD report feeling unable to reach their full potential at work (Fuermaier et al., 2021), future research should dive deeper and investigate which moderators could suppress or even reverse the positive relationship between ADHD symptoms and workplace divergent thinking.

Lastly, our research falls short in examining the full scope of creativity at work. Though creativity at work often begins with workplace divergent thinking, creative achievements in the real-world also requires generated ideas to be selected, developed, championed, and implemented (Perry-Smith & Mannucci, 2017). Though employees who score higher on ADHD may help aid workplace divergent thinking, this study does not portray the implications that ADHD employees may have in continuing the innovation process in organizations. In fact, research has shown that people with ADHD do not outperform neurotypicals (Hoogman et al., 2020), and that people with ADHD often struggle with making decisions (Dekkers et al., 2021), which in turn may impact their ability to decide on one of the ideas they have generated at work. Furthermore, employees with high ADHD symptoms may also have difficulties within other stages of innovation at work, such as idea championing. Idea championing involves gathering support from other colleagues in favor of your ideas, which may be a challenge given the perceived stigma of ADHD employees (Thompson & Lefler, 2015). Additionally, idea

implementation may also be difficult for ADHD employees as they tend to struggle with planning (Alaghband-rad et al., 2020). Therefore future research should examine the full picture on how the innovation process progresses with employees scoring high on ADHD.

Conclusion

In conclusion, though what support employees scoring high on ADHD symptoms may need in the workplace to facilitate their divergent thinking is unclear, their heightened ability to perform workplace divergent thinking is indisputable. Regardless of ADHD symptom severity, organizations should consider implementing rewards for creative performance and creative self-efficacy trainings in order to bolster divergent thinking at work and keep up with a competitive innovation climate. We hope that this study begins to break the stigma around employees with ADHD symptoms at work, that managers implement recruitment initiatives that aim to hire more ADHD employees, and that ADHD employees reading our paper can feel valued and heard.

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Appendix A

ADHD Questionnaire

ADHD

The following questions are about how you behave and think in a variety of situations. Please decide to what extent each of these statements describes you. There are no right or wrong answers.

	Never	Rarely	Sometimes	Often	Very Often
How often do you have trouble wrapping up the fine details of a project, once the challenging parts have been done?	○	○	○	○	○
How often do you have difficulty getting things in order when you have to do a task that requires organization?	○	○	○	○	○
When you have a task that requires a lot of thought, how often do you avoid or delay getting started?	○	○	○	○	○
How often do you have problems remembering appointments or obligations?	○	○	○	○	○
How often do you fidget or squirm with your hands or your feet when you have to sit down for a long time?	○	○	○	○	○
How often do you feel overly active and compelled to do things, like you were driven by a motor?	○	○	○	○	○

Appendix B

Workplace Divergent Thinking Questionnaire

WDT

The following questions are about having ideas at work. Please indicate to what extent the following statements apply to you. The answer options run from 'not at all' to 'very much'.

	1 - Not at all	2	3	4	5 - Very Much
I have many wild ideas at work.	○	○	○	○	○
I come up with a lot of ideas or solutions to problems at work.	○	○	○	○	○
I come up with an idea or solution other coworkers have never thought of.	○	○	○	○	○
I would rate myself highly in being able to come up with ideas at work.	○	○	○	○	○
I have always been an active thinker - I have lots of ideas at work.	○	○	○	○	○
I am able to think up answers to problems that haven't already been figured out at work.	○	○	○	○	○
I am good at combining ideas in ways that other coworkers have not tried.	○	○	○	○	○
I have ideas about new inventions or about how to improve things at work.	○	○	○	○	○

Appendix C

Creative Extrinsic Motivation Questionnaire

CEM

The following questions are about how creativity is valued in your organization. The answer options run from 'never' to 'very often'. Please indicate the degree to which you...

	Never	Rarely	Sometimes	Often	Very often
Receive monetary rewards for good creative ideas	○	○	○	○	○
Receive symbolic public recognition for good creative ideas	○	○	○	○	○
Receive individual praise and recognition from your manager for good creative ideas	○	○	○	○	○
Receive a more positive year-end/mid-year review for good creative ideas	○	○	○	○	○
Receive more training and personal development opportunities for good creative ideas	○	○	○	○	○

Appendix D

Creative Self-Efficacy Questionnaire

CSE

Below you will find several sentences people use to describe themselves. Please decide to what extent each of these statements describes you. There are no right or wrong answers.

	Definitely not	Somewhat not	Neither yes or no	Somewhat yes	Definitely yes
I know I can efficiently solve even complicated problems	○	○	○	○	○
I trust my creative abilities	○	○	○	○	○
My imagination and ingenuity distinguishes me from my friends	○	○	○	○	○
Many times I have proved that I can cope with difficult situations	○	○	○	○	○
I am sure I can deal with problems requiring creative thinking	○	○	○	○	○
I am good at proposing original solutions to problems	○	○	○	○	○