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Creative style and achievement in adults with attention-deficit/hyperactivity disorder

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ABSTRACT

Previous research has suggested that adults with ADHD perform better on some measures of creativity than non-ADHD adults (White & Shah, 2006). The present study replicated previous findings using a standardized measure of creativity (the Abbreviated Torrance Test for Adults, Goff & Torrance, 2002) and extended previous research by investigating real-world creative achievement among adults with ADHD. Results indicated that adults with ADHD showed higher levels of original creative thinking on the verbal task of the ATTA and higher levels of real-world creative achievement, compared to adults without ADHD. In addition, comparison of creative styles using the FourSight Thinking Profile (Puccio, 2002) found that preference for idea generation was higher among ADHD participants, whereas preference for problem clarification and idea development was greater among non-ADHD participants. These findings have implications for real-world application of the creative styles of adults with and without ADHD.

1. Introduction

Attention deficit hyperactivity disorder (ADHD) is a neuropsychological disorder, marked by inattentiveness, impulsivity, and hyperactivity, beginning in childhood and persisting into adulthood (e.g., Castellanos, Sonuga-Barke, Milham, & Tannock, 2006). ADHD may contribute to functional impairment in academic, vocational, and social situations (e.g., Kessler et al., 2006). On the flip side, one benefit of ADHD may be exceptional creativity (e.g., Weiss, 1997). Indeed, empirical studies suggest that individuals with ADHD have relatively high divergent thinking ability (White & Shah, 2006) and may be less influenced by contextual constraints during creative activities (Abraham, Windmann, Siefen, Daum, & Gunturkun, 2006). Collectively, these findings suggest that individuals with ADHD may excel at tasks or in situations that require divergent, unconstrained thinking. However, it is not clear whether or not the advantage observed on laboratory measures extends to creative achievement in real life. Thus, the present study measured creative achievement in ADHD and non-ADHD adults in several different domains, using the Creativity Achievement Questionnaire developed by Carson, Peterson, and Higgins (2005). To further characterize real-world creativity, we measured creative problem solving style preference using the FourSight Thinking Profile (Puccio, 2002). Together, these two measures allow us to go beyond previous studies that have focused on short, laboratory-based measures. Our second objective was to replicate previous findings (White & Shah, 2006) using a standardized measure of divergent thinking, the Abbreviated Torrance Test of Creativity for Adults (Goff & Torrance, 2002). In the sections that follow, we first review previous research in this area, and then discuss the rationale for the present study.

1.1. Uninhibited imaginations: why ADHD may enhance creativity

A key impairment in ADHD is deficient inhibitory control, which makes it difficult to focus attention on relevant aspects of the task at hand (e.g., Clark et al., 2007; Nigg, 2001). However, studies of non-ADHD individuals suggest that low inhibitory control is possibly advantageous for divergent thinking (e.g., Carson, Peterson, & Higgins, 2003; Fiore, Schooler, Linville, & Hasher, 2001). One explanation for the relationship between divergent thinking and poor inhibition is that low inhibition may actually facilitate divergent thinking because concepts and ideas are less likely to be inhibited in working memory. Conversely, convergent thinking tasks that require an individual to ignore competing ideas or partial solutions may benefit from greater inhibitory control (Fiore et al., 2001).

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Indeed, in previous research (White & Shah, 2006) adults with ADHD performed better on the Unusual Uses Task (a measure of divergent creative thinking), but scored lower on the Remote Associates Test (a measure of convergent creative thinking), compared to non-ADHD adults. Moreover, creative differences between adults with and without ADHD were partially mediated by differences in inhibitory control (White & Shah).

1.2. Creative achievement in adults with ADHD

To be useful in real-world contexts, creative ability must generalize outside the laboratory. In non-ADHD individuals, there is a positive correlation between divergent thinking and actual creative achievement (e.g., Carson et al., 2003; Guilford, 1957; Torrance, 1988). On the other hand, some models of creativity suggest that both the ability to diffuse attention and generate ideas *and* the ability to focus attention and work within certain constraints are necessary for achievement (Finke & Bettle, 1996; Finke, Ward, & Smith, 1992). In theory, adults with ADHD may show less real-world creative achievement than one might predict on the basis of divergent thinking measures; whether the ADHD-advantage generalizes to real-world creativity remains an empirical question.

1.3. Overview of the present study

To investigate creative achievement and creative style in adults with and without ADHD, we used the Creativity Achievement Questionnaire, (CAQ; Carson et al., 2005). The CAQ measures creative achievement in 10 domains: drama, humor, music, visual arts, creative writing, invention, scientific discovery, culinary arts, dance, and architecture. As such, it allows for assessing creativity within different domains, as well as in general. This is consistent with the literature suggesting that there are domain-specific and domain-general aspects of creativity (Ward, Smith, & Finke, 1999). For each domain, individuals report their level of achievement (e.g., no talent or training, some training, national recognition, etc.). This levels-approach takes into account the fact that training is a relatively low indication of accomplishment (Ludwig, 1995) and recognition by local and especially national experts is an indication of much greater expertise (Amabile, 1982). Finally, the CAQ is sensitive to individual differences in inhibitory control (Carson et al., 2003). We expected that adults with ADHD in the present study would score higher in overall level of creative achievement than adults without ADHD.

To further characterize real-world creativity in ADHD and non-ADHD adults, we used the FourSight Thinking Profile (Puccio, 2002), a self-report assessment of preferred creative style that is geared toward real-life creative problem solving (DeCusatis, 2008; Puccio, 2002). FourSight identifies four problem-solving styles: Clarifier, Ideator, Developer, and Implementer (Puccio). Clarifiers prefer to define and structure the problem space, Ideators prefer to generate ideas, Developers prefer to elaborate upon or refine ideas and solutions, and Implementers prefer to incorporate a refined idea into a final product or solution (Puccio). Research suggests that the clarification and development stages of problem solving require convergent thinking, while the ideation or "brainstorming" stage involves divergent thinking (Brophy, 2001). Thus, we expected that adults with ADHD in the current study would show greater Ideator preference on the FourSight, while adults without ADHD would demonstrate greater Clarifier and Developer preferences.

Finally, to further validate our previous findings of creative divergent thinking in adults with ADHD (White & Shah, 2006), we compared adults with and without ADHD on the Abbreviated Torrance Test for Adults (ATTA), a standardized and well-accepted measure of divergent creative thinking. We predicted that adults with ADHD would score higher on the ATTA relative to non-ADHD adults.

2. Method

2.1. Participants

Participants were 60 undergraduate students at the University of Memphis, selected from a large introductory psychology course over two semesters. ADHD participants ($N = 30$) were 17 males and 13 females, age $M = 20.1$, ACT $M = 22.3$, and non-ADHD participants ($N = 30$) were 14 males and 16 females, age $M = 19.9$, ACT $M = 21.9$. Of the 30 participants in the ADHD group, 15 were taking stimulant medication for the treatment of ADHD at the time of the study.

2.2. Participant recruitment and selection procedure

To recruit participants for the ADHD and non-ADHD groups, we first administered a questionnaire to approximately 600 students enrolled in introductory psychology as part of a large pre-screening session in which multiple researchers were screening/recruiting participants for various studies. In total, each student completed approximately five surveys/questionnaires in exchange for extra-credit. The questionnaire we administered contained items from Barkley and Murphy's (1998) Current Symptoms Scale and questions asking whether the individual had ever been clinically diagnosed with ADHD/ADD, and if so, whether ADHD/ADD status had been confirmed (either by initial diagnosis or follow-up care) by a clinician within the past six months. We also asked whether the individual had a parent and/or sibling diagnosed with ADHD/ADD. Lastly, we asked the student to provide contact info if s/he wished to participate in a future study. To minimize response bias, students were not to provide identifying info on surveys unless they wished to be contacted for future studies.

On the basis of this pre-screening, students were invited to participate in the study. Of the approximately 600 students, 37 (~6%) reported a diagnosis of ADHD/ADD and scored above the clinical threshold of the Current Symptoms Scale. Of these individuals, 34 participated in the experimental session, but four were excluded from the final sample due to comorbid learning disability (2), anxiety disorder (1), and bipolar disorder (1). To recruit participants for the non-ADHD/ADD control group, we randomly selected from the remaining surveys and contacted those individuals who scored below the clinical threshold on the Current Symptoms Scale and reported no personal or family history of ADHD/ADD. Of the 31 individuals in the original control group, one participant was excluded from the final sample due to history of major depression. To check reliability of self-reported ADHD/ADD symptoms, we administered a second, similar self-report measure, the *Conners Adult ADHD Rating Scales, Screening Version* (Conners, Erhardt, & Sparrow, 1999) during the experimental session. All participants qualified for inclusion based on the CAARS-S:SV (ADHD and non-ADHD participants scored in the clinical and non-clinical ranges, respectively).

2.3. Materials

2.3.1. Current and childhood ADHD symptoms rating scales

The current and childhood ADHD symptoms rating scales (Barkley & Murphy, 1998) are brief, self-report screening questionnaires for assessment of adult ADHD. Questionnaire items reflect diagnostic criteria for ADHD as per the DSM-IV (American Psychiatric Association, 1994). These scales have high reliability (coefficient alphas for inattention items and hyperactive-impulsive items are .92 and .91, respectively), and scale validity is indicated by significant correlations between self-report and spouse/parent ratings (Edwards, Barkley, Laneri, Fletcher, & Metevia, 2001).