

# The Learning/Study Strategies of College Students with ADHD

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It is well known that students of all ages with ADHD are at risk for academic achievement problems, school failure, and are less likely to complete a post-secondary education (Barkley, 2006; Faraone, Biederman, Lehman et al., 1993; Gaub & Carlson, 1997). However, it does not appear that students with ADHD lack the intellectual ability to learn, as students with ADHD are often found to be of average to above average intelligence (Barkley, 1994). While these students seem capable of learning, their hyperactivity, impulsivity, and/or inattention make concentration difficult and may negatively affect their performance (Fowler, 1994).

High levels of academic aptitude, efficient study skills, and positive attitudes are important components of academic performance for both students with disabilities and those without (Larose & Roy, 1991). It is well documented that children with ADHD tend to perform poorly compared to their non-ADHD peers in terms of planning, attention, cognitive processing, and self-control (Frazer, Belzner, & Conte, 1992). Most of the research on the components necessary for academics success has focused on school-age children, not college students and adults with ADHD. One of the few studies of college students diagnosed with ADHD found that this group of students exhibits difficulties with study skills, note taking, summarizing, outlining, and test taking (Zwart & Kallemeyn, 2001). Other documented problems that contributed to academic failure included negative attributional style (internal, stable, and global causes) and internal restlessness (Weyandt et al., 2003). Wallace, Winsler

and NeSmith (1999) found that college students with ADHD demonstrated motivational impairments characterized by a preference for easy work, less enjoyment of learning, less persistence, and a greater reliance on external than on internal standards to judge their performance.

While many publications offer practical advice to help students with ADHD succeed in college (Brinckerhoff, McGuire, & Shaw, 2002; Nadeau, 1995; Parker & Benedict, 2002; Quinn, 2001), only a small number of studies have conducted empirical investigations of the academic difficulties faced by these students. In particular, there remains a lack of research on the study strategies of this population. One measure that is commonly used with college students is the Learning and Study Strategies Inventory (LASSI; Weinstein & Palmer, 2002). This measure has been translated into over 30 languages and is estimated to be in use by half of all colleges in the United States (Murray, 1998).

It is important for researchers to investigate the learning and study strategies used by students with ADHD so that college service providers can help these students achieve optimal academic success at the post-secondary level. Although it is predicted that students diagnosed with ADHD will look more similar to students diagnosed with learning disabilities (LD) than to a non-disability comparison group, students with ADHD and LD are too often lumped together, and significant differences between them have not been adequately identified. Adequate remediation at the college level is contingent upon understanding the specific learning strategies of these two

at-risk groups and differentiating treatment needs.

This article summarizes the findings of our earlier published study on this subject (Reaser, Prevatt, Petscher, & Proctor, 2007). Our aims were to determine:

1. How do the learning strategies and study strategies of students with ADHD compare to those of students with learning disabilities and normal controls?
2. What relative weaknesses are evident within the ADHD group?
3. Are learning and study strategies predictive of academic success (e.g., GPA) in all three groups (students with ADHD, students with LD, and normal controls)?

## THE COLLEGE STUDENTS

The learning and study strategies of a sample of college students diagnosed with ADHD were compared to two other samples: college students diagnosed with a learning disability (LD) and college students without LD or ADHD. We studied 150 undergraduate students from a large public university in the southeastern United States, with 50 students in each of the ADHD, LD, and non-disability (ND) groups. The sample was 60% female. Ethnicity was 54% white, 33% African American, 9% Hispanic, 1% Asian, 1% multi-racial, and 2.3% unreported. Students with ADHD and learning disabilities were self-referred to a campus academic assessment center; they had all encountered academic difficulties and school

failure which led them to seek testing. The ND students were solicited from general education classes.

### OUR MEASURES

All participants were administered the Learning and Study Strategies Inventory, 2nd edition (LASSI; Weinstein & Palmer, 2002). The LASSI is a self-report of college student learning and study strategies. It contains 10, 8-item scales that measure Anxiety, Attitude, Concentration, Information Processing, Motivation, Self-Testing, Selecting Main Ideas, Study Aids, Time Management, and Test Strategies. LASSI raw scores were converted to a standard *T*-score ( $M = 50$ ;  $SD = 10$ ) using the population *M* and *SD* across all three groups.

### OUR FINDINGS

Significant group differences were found for all 10 subscales. Subsequent pair-wise differences were noted between ADHD and ND groups, with subjects in the ND group scoring in a more positive direction on the following subscales: Anxiety, Motivation, Concentration, Information Processing, Self-Testing, Selecting Main Ideas, Test Strategies, and Time Management. Additionally, there were significant differences between ADHD and LD groups, with subjects in the LD group scoring in a more positive direction on the following subscales: Concentration, Selecting Main Ideas, Study Aids, Test Strategies, and Time Management.

Testing subscale strengths and weaknesses for the ADHD population required computing grand mean scores for each subscale, excluding the tested subscale from each analysis. The mean score of each subscale was then compared to the grand mean score of the sample. A positive significant mean difference indicated a strength, while a negative significant mean difference indicated a weakness. Weaknesses were observed for Concentration, Test Strategies, and Selecting Main Ideas. Strengths were found for Attitude, Information Processing, and Study Aids; however, the effect sizes for all these comparisons were in the small range.

The remaining four subscales had non-significant differences in the comparative analysis.

We then studied the relationship of these LASSI scales to grade point average (GPA) for each group. There was a positive, significant effect of motivation for both the ND and ADHD groups, and a positive, significant effect for anxiety for the LD group. In the ND and LD groups, the LASSI subscales accounted for a significant amount of variance in the prediction of GPA. However, for the ADHD group, this relationship was non-significant. Detailed analyses can be found in earlier complete article by Reaser et al. and colleagues (2007).

### OUR CONCLUSIONS AND RECOMMENDATIONS

In summary, there were four areas where the ADHD group reported lower scores than *both* the ND and LD group: Time Management, Concentration, Selecting Main Ideas, and Test Strategies. These areas include characteristics and behaviors that will significantly impact college performance. Time management requires that students create realistic schedules, take into account good and bad times of day and difficulty level of their subjects, and take responsibility for their daily activities. This may be especially difficult for college students with ADHD. Many students have come to rely on parents and teachers in high school who have taken over this function for them. Parents of children with ADHD often report that they monitor many aspects of their child's life, providing structure, discipline, rewards, and consequences necessary to keep their child on track. When these students are on their own at college, they may have little to no experience in managing these functions for themselves. At the clinic where the authors work, it is common to interview students with ADHD who have small yellow "sticky notes" pasted on themselves as reminders, where appointment books are rare, alarm clocks are unused, and long-term schedules or plans are a foreign concept. A standard intervention is to teach

these students how to effectively create and use schedules and planners.

Concentration allows college students to selectively direct their attention to school-related tasks and to maintain their focus when thoughts or activities provide distraction. Students in this study reported that their "mind wandered," that they didn't listen carefully, and that they were unable to refocus once they began thinking about something else. Students with ADHD should be encouraged to sit in the front of the classroom, use note-taking to help increase concentration, take frequent breaks to avoid fatigue, and reward themselves for attainment of small goals.

The LASSI scale for Selecting Main Ideas measures the student's ability to separate the important from the unimportant details. Deficits in this skill area lead students to study voluminous amounts of unimportant information, become overwhelmed by the information, and, consequently, retain very little. Students with ADHD may report that they spend a great deal of time studying, often more than other students, yet they frequently run out of time and find themselves inadequately prepared for tests. Similarly, the scale for Test Strategies measures the student's ability to understand and prepare for different types of tests (multiple choice, short answer, essay), as well as utilize different strategies, depending on whether memorization or recall is required. Again, poor skills in this area lead a student to waste time as they attempt too much, too late, too haphazardly. Interventions targeting these study areas should include very specific skills, such as note-taking, underlining important points, creating outlines and summaries, identifying potential test questions, and reviewing test answers.

There were four areas where the ADHD group reported lower scores than the ND group, but *not* lower scores than the LD group: Motivation, Anxiety, Information Processing, and Self-Testing. Maxwell (1981) suggested that differences in motivation between normal students and developmentally

challenged students may lie in the fact that normal students are motivated *intrinsically*, while developmentally challenged students (e.g., ADHD and LD students) often enter higher education as a means to a better job or self-improvement, and this *extrinsic* motivation is often not sufficient to help them succeed. Similar to time management, students with ADHD are accustomed to parents or teachers providing motivation. Many parents of high school students have developed daily or weekly behavior management plans, with rewards (cell phone, car, allowance) dependent on regular study time and completion of school assignments. However, college life is not as conducive to these external monitors. Interventions at the college level should help students with ADHD internalize their motivation for academic behaviors. Generally, this first requires establishing their *external* goals (e.g., I will study for 15 minutes and then watch my favorite TV show; I will attend class every day this week and then go to the football game on Saturday). Next, a transition can be made to more *intermediate* goals (e.g., if I study hard and get a good grade in this class, I will have the GPA to qualify for the Business school). Finally, the transition can be made to more *internal* motivations (e.g., I'm going to choose to write my paper on a topic I find challenging and interesting, and I'm really beginning to enjoy understanding the concepts involved in writing a business plan). This type of work can be done through the process of ADHD coaching (Swartz, Prevatt, & Proctor, 2005).

Students with ADHD engage in anxiety that may well be a reciprocal process with long-standing roots. Early on, these students experienced school failure consistent with their symptoms of hyperactivity, impulsiveness, and inattention. Task irrelevant responses affected their information processing abilities, thus hindering encoding, storage, and retrieval of information. Sub-

sequent failures created internalized self-referents, leading to beliefs that failure was likely. Anxiety ensued in an escalating, self-perpetuating cycle. Specific recommendations for test anxiety in ADHD students should include interventions utilizing a cognitive-behavioral approach, such as systematic desensitization and relaxation (Hembree, 1988).

The two final areas where the students with ADHD and LD performed less effectively than the ND students were information processing and self-testing. These skills include the ability to create relationships between what one is learning and what one already knows, to put things into one's own words, to frequently review notes, and to make up one's own test questions. Practical interventions would be to help students with ADHD to better process the information they take in from lectures, reading, and studying. For example, students can be encouraged to create analogies based on information they learn, relate new material to material with which they are already familiar, and develop practical examples from their own experiences that seem to them to relate to concepts presented in their readings or class notes.

Students with ADHD were found to perform similarly to ND students in the area of study aids. The Study Aids subscale includes utilization strategies such as web sites, learning centers, study partners, review sessions, and instructors. Again, students with ADHD report knowledge of strategies, while not always following through on the approach due to their motivation and concentration difficulties. The final area where students with ADHD were no different from the ND group was the Attitudes subscale. This suggests that students with ADHD do not have a particular difficulty with being interested in school, liking their classes, or finding college worthwhile. Although their motivation to attend to specific

tasks may be poor, their attitude in general is positive. In the clinic where this study took place, counselors commonly report that the students with ADHD are quite positive about their abilities, often to the point of being unrealistic. A useful intervention can be ongoing discussions and monitoring of the specific behaviors needed to accomplish goals.

Relative strengths and weakness were found in the ADHD group: relative strengths were attitudes, information processing, and study aids, while relative weaknesses were test strategies, selecting main ideas, and concentration. Previous work has suggested that college students who seek help for their disabilities may be overwhelmed by the sheer numbers of recommendations received (Prevatt, Johnson, Allison, & Proctor, 2005). This can be especially problematic for students with ADHD, who have difficulties attending to more than one central issue or idea at a time. The ipsative analyses suggest areas of priority and may indicate starting with interventions in the specific areas of weakness outlined here. However, given the small effect sizes for these analyses, these results may not be as noteworthy as the group comparisons. Also, it will be important to determine specific strengths and weaknesses for individual students, and help them to utilize their strengths to create ways of coping with their difficulties.

For the students with ADHD, grades could not be reliably predicted with the LASSI subscales. Other work utilizing the LASSI suggests that this measure may not work as well in students with lower academic ability (Prevatt, Petscher, Proctor, Hurst, & Adams, 2006). Further work is needed to better understand variables affecting the ADHD population that may make standard measures of learning and study strategies less useful. If measures such as the LASSI are not useful in predicting the mainstay of college achieve-

ment (GPA), then other measures need to be developed that can help us to screen and develop preventive intervention programs for these students.

Overall, the present study provides valuable information documenting the learning and study styles of students with ADHD. The current study shows clear differences between students with ADHD and a comparison group without disabilities. This study also elucidates commonalities and differences between students with ADHD and LD. It is important to differentiate ADHD students from students with learning disabilities and not automatically provide standard interventions across the board. Finally, it is important to prioritize those areas in which the students with ADHD are most likely to experience difficulties.

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## REFERENCES

Barkley, R. A. (2006). *Attention deficit hyperactivity disorder: A handbook for diagnosis and treatment* (3rd ed.). New York: Guilford.

Barkley, R. A. (1994). It's not just an attention disorder. *Attention!*, 1(2), 22–27.

Brinckerhoff, L. C., McGuire, J. M., Shaw, S. F. (2002). *Postsecondary education and transition for students with learning disabilities* (2nd ed.). Austin, TX: Pro-Ed.

Faraone, S.V., Biederman, J., Lehman, B.K. et al. (1993). Intellectual performance and

school failure in children with attention deficit hyperactivity disorder and in their siblings. *Journal of Abnormal Psychology*, 102(4), 616–623.

Fowler, M. (1994). Attention-deficit/hyperactivity disorder. NICHCY Briefing Paper. Revised Edition. Monmouth, NJ: Mary Fowler.

Frazer, C., Belzner, R., & Conte, R. (1992). Attention deficit hyperactivity disorder and self-control. *School Psychology International*, 13, 339–345.

Gaub, M., & Carlson, C. (1997). Behavioral characteristics of DSM-IV ADHD subtypes in a school-based population. *Journal of Abnormal Child Psychology*, 25(2), 103–111.

Hembree, R. (1988). Correlated causes, effects, and treatment of test anxiety. *Review of Educational Research*, 58, 47–77.

Larose, S., & Roy, R. (1991). The role of prior academic performance nonacademic attributes in the prediction of the success of high-risk college students. *Journal of College Student Development*, 32, 171–177.

Maxwell, M. (1981). *Improving student learning skills*. San Francisco: Jossey-Bass.

Murray, D. E. (1998). An agenda for literacy for adult second language learners. *Prospect*, 13(3), 42–50.

Nadeau, K. (1995). Diagnosis and assessment of ADD in postsecondary students. *Journal of Postsecondary Education and Disability*, 11(2–3), 3–15.

Parker, D. R., & Benedict, K. B. (2002). Assessment and intervention: Promoting successful transitions for college students with ADHD. *Assessment for Effective Intervention*, 27(3), 3–24.

Prevatt, F., Johnson, L. E., Allison, K., & Proctor, B. E. (2005). Perceived usefulness of recommendations given to college students evaluated for learning disability. *Journal of Postsecondary Education and Disability*, 18, 71–79.

Prevatt, F., Petscher, Y., Proctor, B., Hurst, A., & Adams, K. (2006). The revised learning and study strategies inventory (LASSI): An evaluation of competing models. *Educational and Psychological Measurement*, 66, 448–458.

Quinn, P. O. (2001). *ADD and the college student: A guide for high school and college students with Attention Deficit Disorder*, (Rev. ed.). Washington, DC: American Psychological Association Press.

Reaser, A., Prevatt, F., Petscher, Y., & Proctor, B. (2007). The learning and study strategies of college students with ADHD. *Psychology in the Schools*, 44(6), 1–12.

Swartz, S. L., Prevatt, F., & Proctor, B. E. (2005). A coaching intervention for college students with Attention Deficit/Hyperactivity Disorder. *Psychology in the Schools*, 6, 647–656.

Wallace, B. A., Winsler, A. & NeSmith, P. (1999). *Factors associated with success for college students with ADHD: Are standard accommodations helping?* Paper presented at the annual meeting of the American Educational Research Association (Montreal, Quebec, Canada, April 19–23, 1999).

Weinstein, C. E., & Palmer, D. R. (2002). *Learning and Study Strategies Inventory (LASSI): Users manual*, (2nd ed.). Clearwater, FL: H & H.

Weyandt, L. L., Iwaszuk, W., Fulton, K., Ollerton, M., Beatty, N., Fouts, H., Schepman, S., & Greenlaw, C. (2003). The Internal Restlessness Scale: Performance of college students with and without ADHD. *Journal of Learning Disabilities*, 36(4), 382–389.

Zwart, L. M., & Kallemeyn, L. M. (2001). Peer-based coaching for college students with ADHD and learning disabilities. *Journal of Postsecondary Education and Disability*, 15(1), 1–15.

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