

A Cognitive-Behavior Therapy and Mentoring Program for College Students With ADHD

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College students with ADHD are at increased risk for a number of functional impairments, the severity of which is of sufficient clinical significance to warrant intervention (DuPaul & Weyandt, 2009). Very little treatment research of this type has been conducted to date (Green & Rabiner, 2012). The need for such research is critical, given the increasing numbers of students with ADHD attending college (Pryor, Hurtado, DeAngelo, Blake, & Tran, 2010), their increased risk for dropping out of college, and the known negative life outcomes for which they may be at increased risk later as adults (Barkley, Murphy, & Fischer, 2008). To address this situation we recently developed and began testing Accessing Campus Connections and Empowering Student Success (ACCESS). The active phase of ACCESS provides group cognitive behavior therapy (CBT), accompanied by individual mentoring. Booster group CBT and mentoring sessions are provided during a maintenance phase. Preliminary findings have revealed significant increases in ADHD knowledge, use of organizational skills, and reductions in maladaptive thinking, all of which are presumed mechanisms of clinical change. Such changes have been accompanied by reductions in ADHD symptoms, improvements in executive functioning, educational benefits, improved emotional well-being, and increased use of disability services and other campus resources. Although promising, such findings are limited by the fact that ACCESS has thus far been tested in an open clinical trial. Thus, additional research is needed to determine its efficacy and effectiveness.

Attention-deficit/hyperactivity disorder (ADHD) is a chronic life-span condition associated with long-term impairment in educational attainment, occupational status, and social relationships, as well as increased risk for psychopathology and legal difficulties (Barkley, Murphy, & Fischer, 2008; Mannuzza, Gittelman-Klein, Bessler, Malloy, & LaPadula, 1993). Individuals identified as having ADHD in childhood are significantly less likely to graduate from high school. Significantly fewer (20–21%) go on to college relative to their non-ADHD peers (68–78%; Barkley et al., 2008).

Although the exact prevalence of individuals with ADHD attending college is not well established, estimates derived from large sample studies indicate that approximately 2 to 8% of college students report clinically significant symptoms of ADHD (DuPaul et al., 2001; McKee, 2008; Norvilitis, Ingersoll, Zhang, & Jia, 2008). Consistent with these estimates are the results of a recently conducted national survey, which revealed that 5% of incoming first-year students reported having

ADHD (Pryor, Hurtado, DeAngelo, Blake, & Tran, 2010). Also, among college students who receive disability accommodations, approximately 25% receive such services on the basis of an ADHD diagnosis (Wolf, 2001). Thus, clinically significant ADHD symptoms would appear to affect a substantial segment of the college population.

As is true for children and adults, the impact of ADHD on the daily and long-term functioning of college students with ADHD is clinically significant and broad in nature. In terms of educational functioning, it has been reported that college students with ADHD maintain lower grade point averages (GPAs), withdraw from a greater number of courses, and take longer to complete their degree programs relative to control individuals without ADHD (Barkley et al., 2008). Of additional clinical and public health significance, Barkley and his colleagues (2008) found that only 9.1% of individuals who display ADHD in young adulthood actually graduate from college compared to 60.6% of the non-ADHD control group. Impairment in psychological and social functioning may occur as well, with many studies indicating that college students with ADHD are more likely to experience higher levels of depression, anxiety, and other types of psychological distress (e.g., Heiligenstein & Keeling, 1995; Rabiner, Anastopoulos, Costello, Hoyle, & Swartzwelder, 2008; Weyandt et al., 2003), and to display lower levels of overall

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adjustment, social skills, and quality of life (Grenwald-Mayes, 2002; Shaw-Zirt, Popali-Lehane, Chaplin, & Bergman, 2005). A handful of studies has explored the driving performance of college students with ADHD and the results consistently indicate that students with ADHD have a higher number of driving citations, speeding violations, license suspensions/revocations, and motor vehicle accidents relative to non-ADHD peers (Barkley, Murphy, DuPaul, & Bush, 2002; Richards, Deffenbacher, & Rosén, 2002). Preliminary findings also suggest that college students with ADHD may be at higher risk for substance abuse relative to non-ADHD controls (Kollins, 2008; Upadhyaya et al., 2005).

Conceptual Model for Understanding Impairment

The degree to which college students with ADHD experience impairment may seem counterintuitive at some level, given that such individuals possessed the qualifications necessary to be admitted to college (Glutting, Youngstrom, & Watkins, 2005). Some researchers have speculated that inadequate educational coping strategies, poor organizational and study skills, and inefficient time management may underlie these difficulties (e.g., Heiligenstein, Guenther, Levy, Savino, & Fulwiler, 1999; Norwalk, Norvilitis, & MacLean, 2008; Reaser, Prevatt, Petscher, & Proctor, 2007; Weyandt et al., 2003). Yet another possible explanation stems from a theoretical consideration of what could be termed a “perfect storm” of circumstances that converge upon students with ADHD as they enter college. Prior to college, many supports may be in place to help manage the deficits in self-regulation (Barkley, 2006) that a student with ADHD might display. Such supports might include, for example, an individualized educational plan or 504 accommodations in school, regular use of pharmacotherapy to address school-related ADHD difficulties, and parental monitoring of school work loads, upcoming tests, and assignment due dates. Parental supervision may also extend into nonacademic domains, thereby relieving the student of the responsibility of managing finances, daily schedules, and other personal matters. As is true for any student, demands for self-regulation skyrocket upon entering college, not only with respect to educational matters but also in terms of various personal and social responsibilities. This developmental transition is indeed normative and often the reason that beginning students experience trouble adjusting to college life. For students with ADHD, however, this same developmental challenge is amplified many times over due to their inherent deficit in self-regulation (Fleming & McMahon, 2012), and the fact that most, if not all, external supports have been removed (Meaux, Green, & Broussard, 2009). Further complicating matters is that many students do not fully understand or accept their ADHD, and therefore are reluctant to seek campus support services that require

disclosure of a condition that makes them different from their peers.

Treatment of ADHD in College

While additional research is needed to identify the causal mechanisms responsible for these outcomes, what remains clear is that college students with ADHD are at increased risk for a broad range of functional impairments and that the severity of these impairments is of sufficient clinical significance to warrant intervention. Somewhat surprisingly, very little treatment research of this type has been conducted to date (DuPaul & Weyandt, 2009; Green & Rabiner, 2012). The only medication study of which we are aware is one recently conducted by DuPaul and his colleagues (2012), who utilized a double-blind, placebo-controlled crossover design to investigate the efficacy and safety of Lisdexamfetamine dimesylate (LDX) among college students with ADHD. Their findings led them to conclude that LDX was efficacious, bringing about large reductions in ADHD symptoms and improvements in executive functioning, along with smaller effects for psychosocial functioning. In terms of studies using non-medication approaches, improvements in educational functioning have been reported for college students with ADHD following exposure to semester-long strategy instruction (e.g., organization, test taking, note taking) delivered by graduate students in special education (Allsop, Minskoff & Bolt, 2005). Of note, one of the factors thought to be related to successful outcome in this study was the supportive nature of the strategy instructor–student relationship, which was derived from qualitative analyses. Less compelling but positive outcome findings have also been reported in studies that used coaching (Prevatt, Lampropoulos, Bowles, & Garrett, 2011) and assistive reading software (Hecker, Burns, Elkind, Elkind, & Katz, 2002) to address the needs of college students with ADHD.

A New Treatment Approach: ACCESS

To the best of our knowledge, no well-controlled study to date has investigated the efficacy of psychological treatment of college students with ADHD. As a first step in addressing this need, our team has been conducting an open clinical trial over the past two years with college students who have ADHD. Our program, known as ACCESS (Accessing Campus Connections and Empowering Student Success) is the student support piece of a larger project known as College STAR (Supporting Transition, Access, and Retention), which is a three-year foundation¹-funded project awarded to the University of North Carolina system and currently involving the University of North Carolina at

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Greensboro (UNCG), East Carolina University, and Appalachian State University.

Over the past two years numerous refinements have been made to ACCESS, some of which impacted its duration. For example, in its first semester of operation ACCESS began as a six-week pilot program for the first six participants. In the two semesters that followed, a total of 31 participants received a 10-week version of this same program. It soon became apparent that this 10-week program was very difficult to incorporate into a single 15-week semester, given the need to recruit and screen participants during the first few weeks of the semester and then do posttreatment measures at the end of the semester. Primarily for this reason ACCESS was shortened to eight weeks for the other six participants included in this paper. ACCESS has remained an eight-week program for the new participants enrolled this fall and will remain an eight-week program for the duration of our three-year funding period. Generally speaking, the topic content has remained the same regardless of how many sessions were delivered. Although the 10-session program allowed for covering certain topics in greater detail, whatever benefits may have resulted from this 10-session format were outweighed by the costs—in this case, the impracticality of conducting all pretreatment, treatment, and posttreatment aspects of the program within a single 15-week semester.

In its current and final form, ACCESS now includes an eight-week active treatment protocol, followed by a maintenance phase in the subsequent semester. In the active treatment phase participants meet weekly for 90 minutes of group cognitive behavior therapy (CBT) and also receive eight 30-minute individual mentoring sessions. During the maintenance phase, participants participate in two booster CBT group sessions scheduled near the start and midpoint of the semester, and receive five to six 30-minute individual mentoring sessions occurring every two to three weeks.

Group Treatment

In the absence of existing psychosocial treatment studies with college students, we turned to the adult ADHD treatment literature to help guide the creation of the ACCESS group treatment protocol. In particular, we were influenced by the seminal empirical work of Safren (Safren, Perlman, Sprich, & Otto, 2005) and Solanto (2011). Thus, evident in the group treatment portion of our protocol are CBT elements common to both programs, which we have adapted for use with college students and standardized in a treatment manual. This includes psychoeducation and skills training to help students cope more effectively with the executive functioning deficits inherent in ADHD, thereby increasing the likelihood for improving functioning across multiple life

domains. Specifically, ACCESS is designed to increase knowledge of ADHD and awareness of campus resources; to improve organization, time management, and other behavioral skills; and to teach cognitive therapy strategies for the purpose of increasing adaptive thinking that promotes greater treatment adherence and reduced risk for secondary emotional and social problems.

In contrast with the adult CBT interventions (Safren et al., 2005; Solanto, 2011) that deliver their main treatment components primarily in a sequential fashion—that is, an ADHD knowledge module followed by a behavioral skills module followed by a cognitive therapy module—ACCESS delivers its main treatment components concurrently. More specifically, a portion of each group treatment session addresses ADHD knowledge, behavioral skills, and cognitive therapy.

The rationale for doing so was based in part on developmental considerations gleaned primarily from clinical experience. For many college students, their understanding of ADHD is limited, often based on what parents and teachers have told them. For still others, their acceptance and ownership of ADHD is also limited, sometimes due to long-standing developmentally appropriate resistance to whatever parents and other adults tell them; at other times, due to a preference not to embrace a label that can have negative connotations, especially as it relates to acceptance within a peer group. For developmental reasons such as these, along with preliminary data from our ongoing projects, we concluded that the need for providing psychoeducation about ADHD was much greater than that for older adults. Thus, we increased the intensity of the ADHD psychoeducation in the CBT group protocol.

A major reason for simultaneously addressing all three major treatment components in each CBT group session was to increase the variety of the material being presented in an effort to maintain student interest and participation in the program. For some students, for example, there is more need for the cognitive therapy piece than the behavioral piece, or vice versa. Rather than require students to wait for what they need, potentially boring them and losing their interest along the way, we opted to present all three treatment components together in each session.

As can be seen in Figure 1, another distinctive feature of ACCESS is that delivery of its three major components is tailored to be developmentally appropriate for college students. Moreover, within most sessions the three major components are integrated to address the same or very similar topics. Portions of several sessions are also set aside for guest speakers to provide information and to answer questions about the campus support units (e.g., Office of Disabilities Services [ODS], Counseling Center) they represent.

	1	2	3	4	5	6	7	8
ADHD Knowledge	Introduction to ACCESS What is ADHD?	What causes ADHD?	Assessment of ADHD	How does ADHD affect school? Does ADHD only affect school?	Depression, anxiety, and other things that may go with ADHD Sex, drugs, and ADHD	What medications are used to treat ADHD?	Is medication the only way to treat ADHD?	A look into the future
Behavioral Strategies	Accessing resources at UNCG	Choosing tools: using a planner and notebook	Getting organized	Getting the most from classes	Studying effectively	Taking exams Managing papers and long term projects	Healthy lifestyle Handling relationships	Setting long-term goals Maintaining your skills
Cognitive Therapy	What is cognitive therapy?	Recognizing maladaptive thinking	Replacing maladaptive thinking with adaptive thinking	How can adaptive thinking help me manage ADHD and improve my school work?	Dealing with emotions and resisting harmful temptations	Sticking with treatment	Improving relations with friends and family	An "adaptive thinking" look into the future Relapse Prevention

Figure 1. Session-by-Session Outline for Group Cognitive-Behavior Therapy Component of ACCESS.

Groups generally include three to seven students at multiple points in their undergraduate education. This group composition encourages the more experienced students to share their experiences and tips with the less experienced students. While keeping the personal information discussed in group confidential is emphasized, students are encouraged to support one another outside of the group (e.g., studying together, helping one another with transportation to the group). All groups are led by licensed Ph.D.-level psychologists.

At the beginning of every session each group member receives detailed handouts summarizing the major points of that session. Such handouts provide an additional sensory modality for processing the session, as well as a template for organizing written notes. These same handouts also serve to guide between-session practice and later can be used as a reminder during the maintenance phase and beyond. Students are given a folder to store their handouts and are encouraged to keep them for later reference.

Although some group content is presented in a lecture format, a back-and-forth, question-and-answer presentation style is used whenever possible to encourage active student participation. For example, when discussing how ADHD may affect students academically, students are invited to share their own perspectives on how ADHD has influenced their academic functioning. Invariably, stories told by one student spark an immediate "That happened to me too" from other students who then share their war stories with one another, thereby contributing to group cohesion. During the behavioral strategies portion of each session, the group leader often opens the discussion by asking students what strategies are working well, or not so well. When a participant reports not having success with a particular strategy, the group leader often asks the other members of

the group to give that participant direct feedback, emphasizing what he or she can do to use a particular strategy more effectively. A common example of this type of situation is when students show their planners to other group members, pointing out how their adaptations of the system (e.g., use of different colored pens, blocking out study times in various ways, stapling "to-do" lists directly into their planners) might also be of benefit to them. Similar strategies are used during the cognitive therapy portion of treatment, during which a whiteboard is used as a visual aid to guide students through thought exercises (e.g., completing thought records challenging maladaptive thoughts).

In contrast with the CBT groups in the active phase of treatment, the two CBT group sessions in the maintenance phase of treatment are substantially less structured in order to be tailored to the needs of each participant. In particular, the two scheduled booster sessions provide an opportunity for addressing new questions about ADHD that may have arisen, for troubleshooting participants' implementation of behavioral strategies, and for refining participant use of cognitive therapy strategies. Another important clinical benefit of these booster sessions is that they provide an opportunity for group members to reconnect with one another and to receive support from fellow group members.

Mentoring

Concurrent with their group work, students work individually with mentors to help them apply what they have learned in group, connect with campus resources, and deal with daily life issues. More specifically, mentors monitor student understanding of ADHD and help them apply behavioral and adaptive thinking strategies to

situations that may occur outside of group treatment or perhaps are better suited to one-on-one rather than group discussions. As a way of addressing academic performance and personal success, mentors also provide guidance on how to access campus support units appropriate to student needs. In addition, mentors help students develop realistic goals, monitor their follow-through on achieving those goals, and provide students with ongoing support (Allsop et al., 2005) and personal coaching (Prevatt et al., 2011). All mentors have a background in psychology, ranging in experience from graduate students in nonclinical master's degree programs to postdoctoral fellows in clinical psychology.

During the first session, which occurs during the first week of group CBT, mentors review students' current academic and personal functioning, use of campus resources, challenges, and goals for treatment. In subsequent sessions, which run concurrently with the remaining seven weeks of group CBT, mentors perform a brief check-in with the participant, collaborate with the participant to set an agenda, review homework from the previous session, review group materials, set new goals and homework assignments, and cover other topics as needed and as requested by participants. The time spent on each of these areas varies according to the needs and interests of each student; applying the material presented in group that the mentor and student feel would be most helpful is emphasized. In the final session, mentors discuss ways for students to maintain their skills and performance once treatment ends.

During the maintenance phase, mentoring sessions are less numerous and even more flexible, guided primarily by student needs and preferences. Thus, some students may choose to use these sessions to review and refine their use of behavioral strategies, whereas others may opt for using these sessions primarily for personal goal setting and support.

Method

Participants

Over the past two years a total of 43 undergraduate students from UNCG have formerly participated in our open clinical trial with ACCESS. Participants were recruited from multiple sources, including cases seen at a campus-based ADHD specialty clinic where CBT was one of the recommendations made during a clinical evaluation feedback session (40%); referrals from the Office of Disability Services (ODS) and other campus units (30%); freshmen who became aware of the program during summer orientation sessions (19%); students referred by their parents (5%); and students who learned of the program via word of mouth (6%). Participants included 27 females and 16 males, encompassing first-year students through seniors. Ages ranged from 17 to 27;

the mean age of participants is 20.3 years. In line with UNCG demographics, 16% of the sample is Hispanic, and 21% come from African American and multiracial backgrounds.

Ninety-five percent of the participants had been diagnosed with ADHD prior to entering ACCESS; of these, only 53% had been formally diagnosed during childhood or adolescence. ADHD status was further assessed to ensure that all participants met full DSM-IV criteria for ADHD as determined either by a recently completed psychological evaluation or by a screening completed by the ACCESS team. Multiple methods and multiple informants were used to make this diagnostic determination, consistent with best-practice recommendations for diagnosing ADHD in adults (Barkley et al., 2008). This included self-report and other report versions of the ADHD Rating Scale (ADHD RS; DuPaul, Power, Anastopoulos, & Reid, 1998), modified to address both childhood and current symptoms. Students also completed the Conners Adult ADHD Rating Scale, Self-Report, Long Version (CAARS-S:L; Conners, Erhardt, & Sparrow, 2006), from which the CAARS-S:L DSM-IV Inattention and Hyperactivity–Impulsivity scores were used to address the developmental deviance of ADHD symptoms. Together with these rating scales, a semistructured, clinician-administered interview was conducted to confirm ADHD status.

Based on student responses to probe questions during a review of background information, selected modules from the Structured Clinical Interview for DSM Disorders (SCID-I; First, Spitzer, Gibbon, & Williams, 1996) were administered to evaluate for the presence of both exclusionary and comorbid psychiatric conditions. Seventeen of the 43 students (40%) met DSM-IV criteria for mood disorders, and 14 (33%) met DSM-IV criteria for an anxiety disorder. Other comorbid diagnoses included adjustment disorders, substance abuse and dependence disorders, and learning disorders. Overall, 25 of the 43 students (58%) had at least one comorbid diagnosis. A majority of students (59%) reported that, at some point during college, they had taken psychiatric medication, either for ADHD symptoms or for another disorder. Data also indicated that 38% of students had utilized psychotherapy since starting college.

Given the high rates of comorbidity reported for adults with ADHD (80%; Barkley et al., 2008), participants were included in ACCESS even if they had diagnosable depression and anxiety disorders, which represent the majority of comorbid conditions that are likely to be present. The comorbid presence of several other conditions, however, was exclusionary, including autism spectrum disorders, bipolar disorder, and other psychiatric conditions whose treatment precludes participation in the study. Whether or not they had comorbid diagnoses, participants receiving pharmacotherapy, psychotherapy,

and other types of support services were allowed into the study, as one of the goals of ACCESS is to increase access to and utilization of such treatment services.

Measures

Pretreatment data were collected during the two weeks prior to the start of the CBT groups. Posttreatment data were collected at the end of the final group session. Posttreatment measures were administered by members of the research team unaffiliated with the participants. Whenever possible, pretreatment measures were also administered by members of the research team unaffiliated with the participant; occasionally, the group leader administered pretreatment measures due to schedule conflicts.

Clinical Change Mechanisms

The underlying assumption of the ACCESS program is that if intended changes occur with respect to ADHD knowledge, behavioral strategies, and cognitive therapy skills, then corresponding improvements should occur in the various domains of daily functioning. As a check on these hypothesized mechanisms of clinical change, four measures have been administered prior to and immediately following active treatment. The first of these is a 50-item Test of ADHD Knowledge that we developed, which requires participants to read a stem description and then respond with either “agree,” “disagree,” or “not sure.” To assess for changes in use of organization, time management, and other behavioral strategies, we also developed the Strategies for Success measure, which includes 30 items that students rate on a scale from 1 (*not well*) to 5 (*very well*) regarding how well they perform various behaviors, such as “Using a planning calendar” and “Setting long-term goals.” Two additional measures were developed to assess ADHD-related cognitions. The first of these is the ADHD Cognitions Test (ACT), a rating scale procedure that asks respondents to indicate on a 1 to 5 basis the degree to which they engage in various ADHD-related cognitions, including items that represent maladaptive cognitions (e.g., “I need it now,” “Being impulsive is a big part of who I am”), as well as items that are reverse coded and represent adaptive thinking, such as “I’m careful in making decisions.” Also developed and implemented as a measure of cognitions was the Cognitive Response Test for ADHD (CRT-A), which requires respondents to complete sentence stems that trigger maladaptive thinking responses among college students with ADHD (e.g., “Our professor gives back our tests and my grade is one of the lowest in the class. I think to myself . . .”; “One of my friends tells me that he or she will call me back in a few minutes but never does. I think to myself . . .”). All responses were coded by multiple raters for reliability and given scores of 0 if they showed no maladaptive thinking patterns, 1 if they showed a maladaptive thinking pattern that the

participant then corrected (e.g., an overgeneralization followed by a retraction of that statement), or 2 if they showed a maladaptive thinking pattern and no sign that the pattern was corrected.

Functional Outcome Measures

The CAARS-S:L DSM-IV inattentive symptoms, DSM-IV hyperactive-impulsive symptoms, and DSM-IV ADHD symptoms total scores were used to assess treatment-induced changes in primary ADHD symptoms. Working memory and other aspects of executive functioning were assessed using the Behavior Rating Inventory of Executive Function-Adult Version (BRIEF-A; Gioia, Isquith, Guy, & Kenworthy, 2000). The BRIEF-A is a self-report instrument that takes approximately 10 minutes to complete and has adequate psychometric properties. The BRIEF-A generates three general composite scores—Behavior Regulation Index, Metacognition Index, and General Executive Composite—all of which served as outcome variables. Participants also completed dimensional measures of psychological functioning, including the Beck Depression Inventory-II (Beck, Steer, & Brown, 1996), and the Beck Anxiety Inventory (Beck & Steer, 1993). Both of these measures have sound psychometric properties and were used to monitor treatment-induced changes in psychological functioning. As noted above, one of the goals of ACCESS is to increase participants’ awareness and use of campus supports and other resources. Thus, students provided responses to service use questionnaires to determine whether this type of change had taken place. Archival educational data were also collected, including GPA for each semester, the proportion of course credits attempted and earned, the number of course withdrawals and incomplete courses, leaves of absence, and academic probations and suspensions.

Preliminary Findings

Attrition

Only three out of these 43 participants completely dropped out of treatment. Such a low rate of attrition is in large part due to the high degree of satisfaction with the program, with 100% of the participants who completed posttreatment interviews ($N = 30$) stating that they would recommend ACCESS to other students with ADHD. This same level of satisfaction presumably contributed to the large number of sessions that were attended. Using an 80% attendance threshold, 86% of our participants finished the CBT group treatment and 84% completed the mentoring portion. Some participants who were partial completers or who dropped out of treatment were nonetheless willing to complete posttreatment outcome measures, and therefore a higher rate of posttreatment data completion (93%) was possible. During the follow-up semester, 68% of participants

Table 1
Summary of Measures Assessing Clinical Change Mechanisms

Measure	Pretreatment	Posttreatment	<i>t</i>	Cohen's <i>d</i>
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)		
ADHD Knowledge	24.67 (6.78)	36.59 (6.56)	-14.05*	2.23
Strategies for Success	84.23 (13.14)	106.43 (15.64)	-6.56*	1.04
ADHD Cognitions Test	76.45 (19.07)	70.45 (18.82)	1.69**	0.27
CRT for ADHD	8.50 (5.63)	3.48 (4.25)	5.97*	0.97

Note. ADHD Knowledge = Test of ADHD Knowledge; CRT for ADHD = Cognitive Response Test for ADHD.

* $p < .001$; ** $p < .10$.

attended at least one booster session and 82% met with their mentor at least once. Full utilization of the program was less common; only 54% attended both booster sessions and only 54% met with their mentor for five or more sessions.

Treatment Fidelity

Treatment manuals with detailed session-by-session outlines were developed to guide the group CBT leaders and mentors in their delivery of the ACCESS program. All CBT group sessions were video recorded but it was not possible to do so for the mentoring sessions due to space and equipment limitations. A random sampling and review of the CBT group sessions revealed excellent adherence to treatment, operationalized in terms of the number of content items in each session outline that were covered. All reviewed sessions exceeded the 90% threshold that was used to classify treatment delivery as satisfactory.

Clinical Change Mechanisms

Preliminary two-tailed paired *t* test analyses of the pretreatment to posttreatment data revealed significant improvements in all three hypothesized mechanisms of change. This includes increased knowledge of ADHD, increased use of organizational and other behavioral strategies, and reduced levels of maladaptive thinking on the CRT-A, all of which were highly significant ($p < .001$) and associated with large to very large effect sizes (see Table 1).

Functional Outcome Measures

As shown in Table 2, paired *t* test analyses revealed significantly reduced levels of inattentive symptoms ($p < .001$) and the ADHD symptom total ($p < .001$), as well as a trend toward lower levels of hyperactive-impulsive symptoms ($p = .054$). The effect sizes associated with these improvements in inattentive symptoms and the ADHD symptom total fell within the moderate to large range,

Table 2
Results for Measures Assessing Functional Outcome

Measure	Pretreatment	Posttreatment	<i>t</i>	Cohen's <i>d</i>
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)		
<i>CAARS-S:L</i>				
Inattention	19.40 (4.52)	15.20 (4.71)	4.81*	0.76
Hyper-Imp	13.88 (6.23)	12.33 (5.74)	1.99**	0.31
Total	33.25 (8.73)	27.55 (8.77)	3.80*	0.60
<i>BRIEF-A</i>				
Metacognition	93.71 (9.25)	81.15 (14.36)	4.84*	0.86
Behavioral Regulation	62.26 (9.84)	54.59 (11.15)	4.29*	0.74
Global Executive	155.97 (15.14)	135.74 (22.37)	4.97*	0.88
BDI-II	17.24 (9.93)	14.74 (11.78)	1.54***	0.27
BAI	18.47 (11.95)	15.26 (9.77)	1.99**	0.35

Note. All *t* tests performed using raw scores; CAARS-S:L = Conners Adult ADHD Rating Scale, Self-Report, Long Version; Inattentive = DSM-IV inattentive symptoms; Hyper-Imp = DSM-IV hyperactive-impulsive symptoms; Total = DSM-IV ADHD symptom total; BRIEF-A = Behavior Rating Inventory of Executive Function-Adult Version; BDI-II = Beck Depression Inventory-II; BAI = Beck Anxiety Inventory.

* $p < .001$; ** $p < .06$; *** $p < .15$.

whereas there was only a small effect found for the changes in hyperactivity–impulsivity. Significant improvements ($p < .001$) were also found for the three domains of executive functioning measured by the BRIEF-A, all of which represented large effects. Although not statistically significant, trends were detected with respect to reductions in levels of anxiety ($p = .055$) and depression ($p = .134$), for which the effect sizes were small.

The degree to which the above significant findings represent normalization of functioning was also addressed via examination of scores falling above and below a 1.5 standard deviation cut point at pretreatment versus posttreatment. For the ADHD symptom total, the percentage of participants within 1 standard deviation of the mean increased from 18% at pretreatment to 40% at posttreatment. This change in overall self-reported ADHD symptoms was driven primarily by the increase in Inattentive scores (8% vs. 28%) and to a lesser extent by changes in the Hyperactive–Impulsive scores (53% vs. 68%). For the BRIEF-A Global Executive Composite, the percentage of participants within 1 standard deviation of the mean increased from 10% at pretreatment to 50% at posttreatment. Increases were also evident for the Metacognition Index (8% vs. 45%) and the Behavioral Regulation Index (45% vs. 65%).

Mixed findings emerged from preliminary analyses of the archival educational data, which in part may be due to the fact that no pretreatment data were available for freshmen and therefore the sample size was reduced. For those for whom complete educational data were available ($N = 23$), there was a statistically nonsignificant change in GPA, increasing from 2.3 in the semester immediately preceding treatment to 2.5 at the end of the semester in which treatment was provided. A different picture emerged when examining these same educational data categorically, defined in terms of the university's cut point for academic probation (i.e., GPA below 2.0). More specifically, fewer participants fell into the academic probation range in the semester in which treatment was provided (18.9%) versus the semester immediately prior to treatment (26.1%).

Student responses to questionnaires ($N = 37$) also suggested increased utilization of campus services. Most striking was the increase in the use of the ODS. Although 41% of participants were registered with ODS at pretreatment, only 19% had actually met with ODS staff to develop a list of academic accommodations. At posttreatment, 62% of participants had chosen to register and 57% of participants were using accommodations. In addition, five students who had not used medication to treat their ADHD symptoms during college were using medication by posttreatment and one student who had not sought psychotherapy during college had begun psychotherapy treatment. Six students who had never

used tutoring reported using tutoring services by the end of the program and seven students who had never used the campus Writing Center reported that they had used this service at least once.

Case Example

Although the above preliminary findings are encouraging, it is important to keep in mind that these results emanate from group-based statistical analyses and descriptions. Not included in such reporting is a detailed analysis of the clinical significance of the findings, that is, the meaning of the results as they relate to student functioning at an individual level. A formal examination of clinical significance is beyond the scope of this paper; however, as a way of capturing how ACCESS might impact a college student with ADHD, the following case example is presented. Important to note is that all identifying data have been removed from this example; where necessary, some descriptions have been modified slightly to further protect the identity of the individual.

“Kimberly” entered the ACCESS program as a junior. She was diagnosed with ADHD during her elementary school years and had taken medication to treat her ADHD symptoms since that time. She reported some difficulty in the past with anxiety but only met criteria for ADHD, combined type, at the time of screening. When she started ACCESS, she was already using some campus resources; she had registered with ODS and had investigated the possibility of tutoring as well. She expressed enthusiasm about the opportunity to take part in ACCESS.

Kimberly participated actively in the CBT group sessions, attending all but one session. As a more senior student than some of her fellow group members, she seemed to enjoy sharing her tips and experiences with the other students. She made at least one friend in the group who she saw socially outside of the program. In discussions covering knowledge of ADHD, Kimberly openly shared her experiences. Kimberly was consistently cooperative when new behavioral strategies were suggested, and she reported trying a number of new strategies for improving her time management and academic performance. However, she sometimes seemed resistant to trying new techniques. For example, when discussing strategies for completing papers, she noted that procrastination had “worked” for her in the past, so it was difficult to encourage her to change that habit. Kimberly was already using a planner to some extent at the start of the program, but she was not yet taking full advantage of it. She was not using the planner to break down tasks into manageable steps or to schedule study sessions; she improved on both of these skills during the program. During the CBT portion of the groups, Kimberly was easily able to provide examples of

maladaptive thinking. She was skilled at developing alternate, more realistic thoughts, whether when working her own thought records or when helping a group member challenge maladaptive thoughts.

Kimberly attended all of her mentoring appointments. She was very motivated and easily set short- and long-term goals for herself. At the start of the program, she expressed the idea that her negative study habits could “never” be changed. During the course of the program she developed more effective study strategies, learned to stick to a study schedule, and learned better note-taking procedures and test-taking strategies. In addition, she developed better time awareness with respect to both academics and social life and improved in her use of to-do lists and in setting reminder alarms. In addition, she developed better awareness of how her thought patterns affected her social relationships. Kimberly utilized academic accommodations through the ODS and participated in campus tutoring as well. Academically, her grades improved; her GPA during her semester of treatment was nearly a full grade point higher than her GPA from the previous semester.

During the follow-up semester, Kimberly attended both booster sessions and five mentoring sessions. She continued to have a strong relationship with her mentor and was eager to meet with her. She stated that her transition to the new semester was easier than usual because she was continuing to use the strategies she had learned from the program. She has made considerable progress and views the program as a valuable support.

Discussion

The impaired functioning of college students with ADHD has critical implications for the long-term financial and mental health status of this population, as well as for institutions of higher learning concerned with graduation and retention rates, and for society as a whole.

Despite the obvious need for intervention, very little treatment research has been conducted with this population to date (DuPaul & Weyandt, 2009; Green & Rabiner, 2012). Although a well-controlled medication trial study recently has been published (DuPaul et al., 2012), missing from the literature are studies investigating the efficacy of psychosocial treatment. In response to this situation, our team has been developing and testing ACCESS, a psychosocial treatment program for college students with ADHD.

Guided by conceptual considerations and empirical findings, ACCESS includes elements of previously reported treatment protocols (Allsop et al., 2005; Prevatt et al., 2011; Safren et al., 2005; Solanto, 2011) that have been blended together to create a developmentally appropriate intervention that uses a unique combination of group CBT and individual mentoring to meet the broad

educational, psychological, social, and executive functioning needs of the ADHD college population. Preliminary findings from this ongoing project are most encouraging. Attesting to the construct validity of the design, there were clear improvements in the hypothesized mechanisms of clinical change (i.e., ADHD knowledge, behavioral strategies, adaptive thinking), representing large to very large effects. Medium to large effects were also associated with the significant improvements observed in self-reported ADHD symptoms and executive functioning. Trends approaching statistical significance further suggested that ACCESS may contribute to improvements in emotional functioning. Also emerging from the data was preliminary evidence of real-world educational benefits, along with increased utilization of campus resources.

This latter finding regarding campus resources warrants additional comment. ACCESS is not intended to be a stand-alone intervention that addresses all of the challenges facing college students with ADHD. On the contrary, ACCESS is designed to empower students with the knowledge and skills necessary to better manage their ADHD and any comorbid conditions that may be present, in part through the assistance it gives students in making connections with other campus units that provide clinical services and other support. In this regard, ACCESS is best viewed as an integral component of an overall multimodal treatment approach that includes other interventions (e.g., medication management, counseling, tutoring).

Although promising, such findings are limited by the fact that ACCESS has thus far been delivered in an open clinical trial. Future research must therefore include a control or comparison group to determine whether these preliminary outcomes are in fact due to ACCESS versus resulting from nonspecific therapeutic attention factors, the effects of repeated testing, and so on. Another factor limiting any interpretation of these preliminary findings is the restricted range of outcomes used in the design. To address this limitation, future research will need to consider broadening the scope of outcomes in a way that includes not only multiple domains of daily functioning but also less reliance on self-report. Because we have only analyzed a limited amount of data from student records, we are not in a position to comment on the full impact of ACCESS on educational functioning. Any statements on the stability of ACCESS-induced improvements over time must also await our upcoming analyses of data collected from the maintenance phase of our project.

Another unexplored area of great clinical interest is the degree to which a student's level of motivation and other individual differences predict successful outcome. Although most students were actively engaged in ACCESS, some were not. Often, those not appropriately

engaged were freshmen whose parents had encouraged them to participate during their first semester on campus. For others, dealing with comorbid depression or anxiety seemed to interfere with their participation. For still others, holding down a job while attending school often led to scheduling conflicts that made treatment adherence difficult. To determine for whom ACCESS is best suited, it is critical that future research examine these and other individual differences.

To the extent that future research supports the preliminary findings from this study, ACCESS can potentially serve as a model intervention for use on many college campuses. The eight-week format that we now use for ACCESS would likely accommodate any variability in the length of semesters, especially those ranging from 12 to 16 weeks. Such may not be the case, however, for institutions using a quarterly rather than a semester system. There is also some degree of flexibility in the setting in which ACCESS may be delivered. Given that most colleges and universities have student counseling centers, this type of campus setting would seem especially well suited to offering an ACCESS program. So too would an ODS, which is also found on most campuses. Even more important than the convenience of the physical setting, however, is the training and experience level of the staff housed within those settings. At a minimum, successful implementation of ACCESS requires background and expertise in the use of cognitive and behavioral therapy strategies. Advanced evidence-based knowledge of ADHD as a disorder is also considered to be an important prerequisite for professionals delivering ACCESS. Thus, campus staff that have these qualifications would likely be in a position to deliver ACCESS effectively. Such an assumption, however, is yet untested and therefore will need to be substantiated by future research.

In conclusion, ACCESS is a promising new psychosocial program that has great potential for being used in many different college and university settings. Of even greater importance are its potential public health benefits, in that ACCESS can serve as a protective factor that increases the likelihood that students with ADHD can be more successful not only during college but also as they begin their developmental transition into the postcollege adult world.

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