A randomized controlled trial examining CBT for college students with ADHD

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Abstract:

Objective: College students with attention deficit/hyperactivity disorder (ADHD) are at increased risk for numerous educational and psychosocial difficulties. This study reports findings from a large, multisite randomized controlled trial examining the efficacy of a treatment for this population, known as ACCESS—Accessing Campus Connections and Empowering Student Success. Method: ACCESS is a cognitive–behavioral therapy program delivered via group treatment and individual mentoring across two semesters. A total of 250 students (18–30 years of age, 66% female, 6.8% Latino, 66.3% Caucasian) with rigorously defined ADHD and comorbidity status were recruited from two public universities and randomly assigned to receive ACCESS immediately or on a 1-year delayed basis. Treatment response was assessed on three occasions, addressing primary (i.e., ADHD, executive functioning, depression, anxiety) and secondary (i.e., clinical change mechanisms, service utilization) outcomes. Results: Latent growth curve modeling (LGCM) revealed significantly greater improvements among immediate ACCESS participants in terms of ADHD symptoms, executive functioning, clinical change mechanisms, and use of disability accommodations, representing medium to large effects (Cohen's d, .39–1.21). Across these same outcomes, clinical significance analyses using reliable change indices (RCI; Jacobson & Truax, 1992) revealed significantly higher percentages of ACCESS participants showing improvement. Although treatment-induced improvements in depression and anxiety were not evident from LGCM, RCI analyses indicated that immediate ACCESS participants were less likely to report a worsening in depression/anxiety symptoms. Conclusions: Findings from this RCT provide strong evidence in support of the efficacy and feasibility of ACCESS as a treatment for young adults with ADHD attending college.

Keywords: ADHD | intervention | college students | cognitive–behavioral therapy | clinical trial

Article:

Attention Deficit/Hyperactivity Disorder (ADHD; American Psychiatric Association, 2013) is characterized by developmentally inappropriate symptoms of inattention and/or hyperactivity-impulsivity that remain present and impair functioning across the life span. Although much has been learned about the impact of ADHD on children and adults (Barkley, 2015), relatively less

research attention has been directed to the way in which ADHD unfolds among individuals transitioning through the developmental period known as emerging adulthood, from 18 to 25 years of age (Arnett, 2007). Most of what is known about this segment of the ADHD population comes from studies of young adults attending 4-year colleges, which in recent years have witnessed dramatic increases in their enrollments of students with ADHD (Eagan et al., 2014; Weyandt & DuPaul, 2012). For those individuals with ADHD who achieved a level of success during high school that made postsecondary admission possible, it would seem reasonable to expect that they might be able to continue displaying educational success during college. Contrary to this expectation, once enrolled in college, students with ADHD display significant academic deficits, including lower end-of-semester grade point averages (GPAs) and less effective study strategies, relative to their non-ADHD peers (DuPaul et al., 2018; Gormley et al., 2019). Although the directionality of the association is unclear, up to 55% of the ADHD college student population may also display comorbid psychiatric disorders, most often involving active depressive (32.3%) or anxiety (28.6%) disorders (Anastopoulos et al., 2018). Additional impairment has been reported in terms of poorer adjustment to college (Blasé et al., 2009) and an overall lower quality of life (Pinho et al., 2019). Together, such findings may help to explain why college students with ADHD are more likely to be placed on academic probation, to take longer to complete their degrees, and to drop out of college (Barkley et al., 2008; DuPaul et al., 2018; Hechtman, 2017).

Conceptually, it has been suggested that such difficulties are set in motion by a “perfect storm” of life circumstances that converge following the transition from high school into college (Anastopoulos & King, 2015). Upon enrolling in college, all students face increased demands for self-regulation, not only with respect to educational matters but also in terms of various personal and social responsibilities. This developmental transition is normative and often the reason why many first-year students, whether they have ADHD or not, experience trouble adjusting to college. For students with ADHD, navigating this developmental transition is substantially more challenging, in large part due to their lack of age-appropriate self-regulation abilities (Barkley, 2015; Fleming & McMahon, 2012). Further complicating matters is the fact that many external supports that were in place prior to college, such as parental monitoring and school-based 504 accommodations, are no longer available (Meaux et al., 2009).

To reduce risk for negative outcomes, it is critically important for college students with ADHD to have ready access to treatment. On many college campuses, disability service accommodations are the primary mechanism by which students with ADHD receive assistance (Wolf et al., 2009). Unfortunately, many college students choose not to use such services (Fleming & McMahon, 2012). Moreover, when used alone, disability accommodations appear to produce minimal long-term benefits (e.g., Lewandowski et al., 2013; Miller et al., 2015) and do not directly address co-occurring executive functioning deficits (Antshel et al., 2014) and psychiatric disorders (Anastopoulos et al., 2018). Stimulant medication is another treatment option that has been well established in children and adults (Barkley, 2015), but research addressing its use with college students has been limited to only one clinical trial (DuPaul et al., 2012). Despite this study’s promising results, showing that lisdexamfetamine dimesylate reduced ADHD symptoms and improved executive functioning, additional medication trials are needed to evaluate efficacy in conjunction with safety concerns, including the risk for misuse, abuse, and diversion on college campuses (Rabiner et al., 2009).

More recently, psychosocial interventions for college students with ADHD have been developed and pilot tested (He & Antshel, 2017). These investigations incorporate a diverse array of therapeutic perspectives, including cognitive–behavioral therapy (CBT; LaCount et al., 2015; Van der Oord et al., 2020), coaching (Prevatt & Yelland, 2015), dialectical behavior therapy (Fleming et al., 2015), mindfulness-based cognitive therapy (Gu et al., 2018), self-monitoring (Scheithauer & Kelley, 2017), and organization, time management, and planning skills training (OTMP; LaCount et al., 2018).

Findings from these initial investigations have consistently revealed significant improvements in primary ADHD symptoms, most often involving inattention (Fleming et al., 2015; Gu et al., 2018; LaCount et al., 2015; LaCount et al., 2018,). Less often, improvements in self-reported executive functioning (Fleming et al., 2015) and symptoms of depression and anxiety (Gu et al., 2018) have been observed. Although not routinely assessed, improvements in educational functioning have been reported, including decreases in self-reported academic impairment (LaCount et al., 2018), gains in self-reported learning strategies (LaCount et al., 2015; Prevatt & Yelland, 2015) and increased use of disability services and other campus resources (Anastopoulos & King, 2015). Notably, corresponding improvements in GPA have not been reliably demonstrated (Fleming et al., 2015; Gu et al., 2018; LaCount et al., 2018).

Taken together, results from this emerging literature offer much promise for the role that psychosocial interventions, especially CBT programs, may play in the overall clinical management of college students with ADHD. At the same time, it is necessary to acknowledge that reported findings have been inconsistent across investigations, which limits conclusions about efficacy. Given that programmatic research in this area has been lacking, many of these inconsistent findings are likely attributable to methodological limitations and differences across studies (He & Antshel, 2017). These limitations include, for example, the use of small samples ($n < 60$) drawn from single-site university settings. Diagnostic rigor has typically been lacking, with many studies relying upon either symptom counts from a single rating scale or self-report of prior ADHD diagnoses as the basis for determining participants' ADHD status. Although co-occurring psychiatric conditions are common among individuals with ADHD, their presence has either not been addressed or addressed on a very limited basis. Additional cross-study differences are evident with respect to the format (i.e., group vs. individual) and number (i.e., 3–10) of treatment sessions offered, as well as the duration of treatment (i.e., 1–3 months). Furthermore, measures assessing clinical change mechanisms are rarely included; thus, the conceptual underpinnings of these interventions are not well understood. Also limited is our understanding of the persistence of therapeutic improvements beyond active treatment, with only a few studies reporting follow-up assessments of relatively short duration (i.e., 3 months).

The present study reports findings from a large-scale, multisite randomized controlled trial (RCT) examining the efficacy of the CBT program known as ACCESS—Accessing Campus Connections and Empowering Student Success (Anastopoulos & King, 2015; Anastopoulos et al., 2020). ACCESS incorporates elements of empirically supported adult CBT programs (Safren et al., 2005; Solanto, 2011), adapted to the developmental needs of emerging adults with ADHD in college. ACCESS was originally developed, refined, and pilot tested in an open clinical trial involving 88 college students with rigorously defined ADHD (Anastopoulos & King, 2015). An

iterative process was used to determine optimal mode of delivery (e.g., number and length of treatment sessions). In its current and final form, ACCESS is delivered across two consecutive semesters, the first of which is an intensive 8-week active phase, followed by a less intensive semester-long maintenance phase in which treatment is gradually faded. In each phase, treatment is delivered in both a group and individual mentoring format. The active phase includes eight weekly group sessions, each of which is 90 min in length. Concurrent with these group sessions are weekly individual mentoring sessions, each of which is approximately 30 min in length. The purpose of individual mentoring is threefold: to reinforce what the student learns in the CBT group; to assist the student in establishing personal goals and monitoring progress; and to help the student make connections with campus resources as needed (e.g., accommodations, counseling, medication). As part of the process of fading treatment during the maintenance phase, one 90-min booster group session is offered at the start of the semester, along with up to six 30-min individual mentoring sessions that can be scheduled flexibly throughout the semester at times best meeting participant needs.

Both treatment delivery formats are used to address the goal of the ACCESS program—namely, to give college students with ADHD the knowledge and skills necessary to be successful in their daily life functioning. Specifically, ACCESS is designed to: (a) give college students a developmentally appropriate understanding of their own ADHD via a more intensive "dosage" of ADHD knowledge than is delivered in adult CBT programs (Safren et al., 2005; Solanto, 2011); (b) improve organization, time management, and other behavioral strategies that target executive functioning deficits commonly found among individuals with ADHD; and (c) increase adaptive thinking skills via cognitive therapy strategies to address co-occurring depression and anxiety features that are frequently comorbid with ADHD (Anastopoulos et al., 2018). In contrast with the sequential way in which adult CBT programs (Safren et al., 2005) deliver these treatment modules (i.e., ADHD knowledge → behavioral strategies → cognitive therapy), ACCESS delivers them simultaneously in an integrated fashion, focused on a common theme (e.g., academic functioning), in each of the eight active phase group sessions (see Figure 1). The underlying premise of ACCESS is that improvement in ADHD knowledge, behavioral strategies, and adaptive thinking skills—that is, the hypothesized clinical change mechanisms—will facilitate improvements in multiple domains of daily life functioning negatively impacted by ADHD.

Results from our completed open clinical trial revealed statistically significant improvements in ADHD symptoms, executive functioning, levels of depression and anxiety, and the number of semester credit hours attempted and earned (Anastopoulos et al., 2020). Of note, such improvements were evident at the end of the active phase and maintained throughout the maintenance phase, 5 to 7 months after treatment started.

The current study builds upon these promising findings and addresses many of the previously mentioned limitations in the literature. For example, the current RCT used a large sample of 250 college students with rigorously defined ADHD and comorbid psychiatric diagnoses drawn from two university settings. Participants were randomly assigned either to a group receiving the ACCESS treatment immediately or to a Delayed Treatment Control (DTC) condition receiving treatment 1 year later. In contrast with other CBT programs, ACCESS incorporates concurrent delivery of group and individual sessions, which affords participants exposure not only to the

unique benefits of each treatment modality, but also to a greater total number of therapeutic contacts (i.e., 21–25), thereby increasing the intensity of treatment. To better address the chronic nature of ADHD, participants remain in contact with ACCESS staff for a substantially longer duration (i.e., 6–7 months across two semesters) than is offered in similar interventions. To assess the stability of therapeutic change, outcome was assessed on three occasions, spanning a full academic year. Also included were measures of hypothesized clinical change mechanisms that have direct bearing on the construct validity of the design.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
ADHD Knowledge	Primary Symptoms	Causes	Assessment	School & Daily Functioning	Emotions & Risk-Taking	Medication Management	Psychosocial Treatment	Long-Term Outlook
Behavioral Strategies	Campus Resources	Planners & To-Do Lists	Getting Organized	Attending Classes	Effective Studying	Long-Term Projects	Social Relationships	Long-Term Goals
Adaptive Thinking	Basic Principles	Maladaptive Thinking	Adaptive Thinking	Managing Schoolwork	Handling Emotions	Adhering to Treatment	Social Relationships	Relapse Prevention

Figure 1. Weekly CBT Group Session Content During the Active Phase of the ACCESS Intervention.
Note. CBT = cognitive–behavioral therapy; ADHD = attention deficit/hyperactivity disorder.

The purpose of this article is to present RCT findings that directly address the efficacy of ACCESS across its entire two-semester long delivery. Given the large number of outcome variables included in the RCT, the focus of this initial efficacy article is limited to treatment-induced changes in: (a) primary outcomes addressing ADHD symptoms, executive functioning (EF), and co-occurring symptoms of depression and anxiety, and (b) secondary outcomes related to hypothesized clinical change mechanisms and treatment service utilization. It was hypothesized that, relative to the DTC condition, participants receiving ACCESS would display significantly greater improvements in their ADHD symptoms, EF, co-occurring depression and anxiety symptoms, hypothesized clinical change mechanisms, and treatment service utilization after both phases (i.e., active and maintenance) of treatment were completed. Using reliable change indices (Jacobson & Truax, 1992) to address the clinical significance of these findings, it was also expected that higher percentages of ACCESS participants would show reliable postintervention improvements in these same outcome domains relative to DTC participants.

Method

Participants

Participants for this study were recruited from two large, public universities in the southeastern United States that serve large numbers of first-generation college students and students of color. As shown in Figure 2, a total of 361 students were initially consented into the project and screened for eligibility. Eighty-one were deemed ineligible, either because they did not meet research criteria for ADHD or because they displayed a co-occurring psychiatric condition (e.g., autism spectrum disorder, bipolar disorder, obsessive–compulsive disorder) requiring treatment that went beyond the scope of the intervention. The remaining 280 participants meeting eligibility criteria were randomly assigned to receive ACCESS immediately or on a 1-year delayed basis in the DTC group. Random assignment was stratified by medication status to ensure that equivalent numbers of participants taking ADHD medication were assigned to each group condition. Thirty eligible students assigned to the immediate ACCESS group could not begin treatment due to class and job schedules that conflicted with planned group meeting times. This resulted in a final sample of 250 participants, including 165 females (66%) and 85 males (34%), ranging in age from 18 to 30 years (M = 19.7, 8.4% ≥ 23) and representing a cross-section of postsecondary education levels (i.e., 47.6% first-year students, 16.4% sophomores, 26.4% juniors, 9.6% seniors). A significant number of these students had experienced academic difficulties prior to enrolling in college, with 26.8% having received at least one D or F grade in high school. Another 38.4% reported having to work part-time to support themselves financially while attending college. Approximately 6.8% of the participants reported having Hispanic/Latino backgrounds; 66.3% identified as Caucasian, 14.2% as African American, 5.3% as Asian, 10.6% as multiracial, and 3.3% as other or not reported.

A multigating, multimethod, multi-informant assessment approach (Ramsay, 2015) was used to determine ADHD and comorbidity status. Potential participants were initially screened based on their responses to the ADHD Rating Scale-5 (DuPaul et al., 2016). Students endorsing four or more symptoms of either inattention and/or hyperactivity-impulsivity were scheduled for further evaluation, which included: a semistructured interview assessing current ADHD symptoms and their associated impairment; self-report rating scales assessing current and childhood symptoms of ADHD; a structured interview addressing other psychiatric disorders that may be exclusionary or co-occurring with ADHD; and self-report ratings of depression and anxiety symptoms. Family, school, and social background information was also collected, along with prior mental health evaluation and treatment histories. To increase the accuracy of addressing the childhood onset criteria, efforts were made (with consent) to obtain parental ratings of participants' ADHD symptoms occurring prior to 12 years of age. For a variety of reasons (e.g., consent withheld, parents not available), it was not possible to obtain parental ratings for 12.4% of the sample, but this did not preclude participation in the study. All collected evaluation data were forwarded to a panel of three ADHD experts (i.e., the two study principal investigators and a nationally recognized adult ADHD clinical consultant), who independently reviewed each case to determine if criteria for ADHD and/or other psychiatric disorders had been met, as defined in the *Diagnostic and Statistical Manual of Mental Disorders–Fifth Edition* (*DSM–5*; American Psychiatric Association, 2013). Final determination of ADHD and psychiatric comorbidity status required unanimous panel agreement.

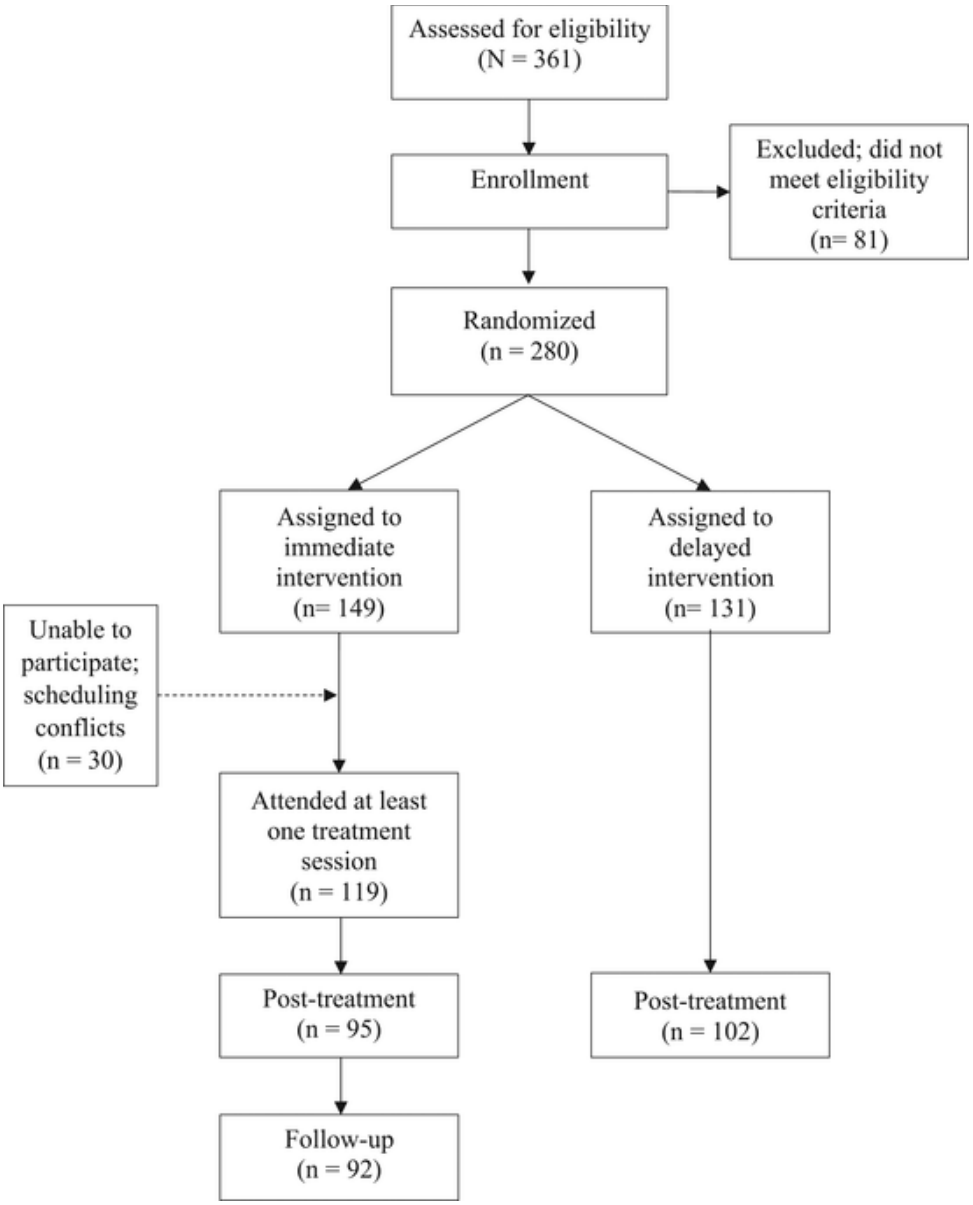

Figure 2. Consort Diagram Showing Flow of Participants Through Clinical Trial. Drop-Out Rates Were Comparable for the Immediate (20.2%) and Delayed Treatment Groups (22.1%) at Posttreatment (Postmaintenance Phase). Drop-Outs Did Not Differ From Completers on Any Pretreatment Demographic, Primary Outcome, or Secondary Outcome

Included among the 250 participants in the final sample were 58.4% who received an ADHD Combined presentation diagnosis and 41.6% who displayed an ADHD Predominantly Inattentive presentation. Although it was not a requirement for inclusion in the study, 66.4% of these participants reported having been previously diagnosed with ADHD; another 24.4% reported histories of being strongly suspected of having ADHD—that is, significant others (e.g., parents, teachers, friends) repeatedly raising the possibility that the participant might have ADHD. Sixty percent also met *DSM–5* criteria for at least one psychiatric diagnosis co-occurring with ADHD, most often involving a current anxiety or depressive disorder. For clinical and ethical reasons, students in both conditions could participate in the study regardless of whether they were

receiving other forms of treatment. At the time they were randomly assigned to a group, nearly half (47.2%) of the participants in the final sample were taking medication for ADHD; 27.7% were taking medication for other medical and mental health conditions, including 10.8% for the treatment of depression and anxiety.

As shown in Table 1, the two groups (immediate = 119, DTC = 131) were statistically equivalent at pretreatment across these demographic and clinical variables of interest.

Table 1. Pretreatment Demographic and Clinical Characteristics by Group

	ACCESS	DTC
Variable	***M (SD)***	***M (SD)***
Age (years)	19.7 (2.2)	19.6 (2.1)
CAARS Total ADHD score	34.4 (9.2)	34.7 (8.9)
	%	**%**
Sex (female)	64.7	67.2
Race: Caucasian	66.1	66.4
African-American	11.9	16.4
Asian	5.1	5.5
More than one race	11.9	9.4
Other/not reported	5.1	2.4
Ethnicity: Hispanic	7.0	6.6
First year students	49.6	45.8
Comorbidity status	62.2	58.0
ADHD: Combined	58.8	58.0
Predominantly inattentive	41.2	42.0
ADHD medications	53.3	41.7
Other medications	26.1	29.1

Note. ACCESS = immediate treatment; DTC = Delayed Treatment Control; ADHD = attention deficit/hyperactivity disorder; CAARS = Conners Adult ADHD Rating Scale; Comorbidity status = presence of any non-ADHD psychiatric disorder; ADHD medication status = reported use of medication to treat ADHD; Other medication status = reported use of a medication to treat other medical/mental health conditions.

Diagnostic Measures

Semi-Structured Interview for Adult ADHD

The Semi-Structured Interview for Adult ADHD was developed specifically for this study because it allowed for a more thorough and simultaneous assessment of symptoms and ADHD-specific impairment. For each of the 18 ADHD symptoms, respondents rated not only the frequency of occurrence but also the degree to which there was associated impairment in daily functioning. In contrast with the fixed way in which ADHD symptoms are listed in rating scales, interviewers were allowed to give developmentally appropriate parenthetical descriptions of ADHD symptoms to increase participant understanding of the questions being asked. Additional questioning is directed to the other *DSM–5* criteria addressing duration, age of onset, and exclusionary conditions. Preliminary (unpublished) analyses indicate that this interview possesses satisfactory reliability (coefficient α from .84 to .90) and is highly correlated with CAARS-S:L symptom dimensions (from .78 to .84). Information from this interview was used in combination with other assessment data to determine ADHD status.

ADHD Rating Scale-5

The ADHD Rating Scale-5 (ARS-5; DuPaul et al., 2016) is an 18-item questionnaire that possesses excellent reliability (coefficient α from .89 to .94) and validity and has been used widely in research and practice. The self-report and parent-report versions of the ARS-5, which address current functioning, were modified to include a second column for rating each symptom during childhood. Together, these self-report and parent ratings were used to provide a more specific estimation of the onset and persistence of ADHD across the life span.

Structured Clinical Interview for *DSM–5*: Research Version (SCID-5-RV)

The SCID-5-RV (First, Williams, Karg, & Spitzer, 2015) screeners for the mood, anxiety, trauma, and substance use modules (coefficient α from .85 to .98) were initially administered to all participants, after which complete modules were given as needed for disorders suspected of being present. Information gathered from the SCID-5-RV was used to identify psychiatric conditions that could either rule out an ADHD diagnosis or co-occur with ADHD, as determined by the expert panel.

Primary Outcome Measures

Conners Adult ADHD Rating Scale, Self-Report, Long Version (CAARS-S:L)

The CAARS-S:L (Conners et al., 2006) is a widely used, psychometrically sound (coefficient α from .73 to .84) measure of ADHD in adults. The *DSM–IV* Inattentive (IN), Hyperactive-Impulsive (HI), and Total scores were used to assess treatment-related changes in ADHD symptoms.

Behavior Rating Inventory of Executive Function–Adult Version (BRIEF-A)

The BRIEF-A (Roth et al., 2005) is a 75-item psychometrically sound (coefficient α = .96) self-report measure that generates nine clinical scales (e.g., Self-Monitoring, Planning, Working Memory, Emotional Control), as well as three composite scales—the Behavior Regulation Index (BRI), Metacognition Index (MCI), and overall Global Executive Composite (GEC)—which were used to assess executive functioning (EF) deficits. Higher scores on these BRIEF-A composite scales indicate poorer EF.

Beck Depression Inventory, Second Edition (BDI-II)

The BDI-II (Beck et al., 1996) is a psychometrically sound (coefficient α = .93) measure of adult depression that is widely used in research and clinical practice. The BDI-II total score served as a measure of treatment-induced changes in depressed mood.

Beck Anxiety Inventory (BAI)

The BAI (Beck & Steer, 1993) is a psychometrically sound (coefficient α = .92) measure of anxiety symptoms in adults, used widely in research and clinical practice. The BAI total score was used to assess changes in overall levels of anxiety.

Secondary Outcome Measures

Because we were not aware of existing measures for evaluating hypothesized clinical change mechanisms and participant service utilization, we assessed these constructs using procedures that we developed for this and related studies involving college students with ADHD.

Test of ADHD Knowledge (TOAK)

The TOAK is a 40-item questionnaire that measures general knowledge of ADHD. For each item, participants respond to statements about ADHD (e.g., "Hereditary factors play a major role in determining if someone will develop ADHD") with "agree," "disagree," or "not sure." Correctly endorsed "agree" and "disagree" items are summed to yield a total score, with higher scores indicating greater knowledge of ADHD. Preliminary (unpublished) findings based on the current sample indicate that the TOAK possesses excellent internal consistency (coefficient α = .86) and demonstrates evidence of convergent validity.

Strategies for Success (SFS)

The SFS contains 18 items that assess self-reported use of behavioral strategies (e.g., "Doing the most important tasks first") for managing academic work in college. Respondents indicate how adeptly they use these strategies on a 5-point scale, with 1 indicating *not well* and 5 indicating *very well*. Items are summed to yield a total score, with higher scores indicating more frequent behavioral strategy use. Initial (unpublished) findings from the current sample suggest that the SFS possesses excellent internal consistency (coefficient α = .84).

ADHD Cognitions Scale–College Version (ACS-CV)

The ACS-CV is a 12-item questionnaire that assesses self-reported frequency of ADHD-related cognitions (e.g., "My work is better if I wait until the last minute"). Each item is rated on a 5-point scale, and ratings for all 12 items are summed to create a total ACS-CV score, with higher scores reflecting more frequent engagement in maladaptive thinking patterns. The ACS-CV uses many of the same items found in the 7-item ACS developed for older adult populations (Knouse et al., 2019). For college students, a psychometrically sound 12-item version was found to be more appropriate, with satisfactory internal consistency (coefficient α = .77) and evidence of convergent and divergent validity.

Services for College Students Questionnaire (SCSQ)

The SCSQ is a self-report descriptive measure that monitors participant use of campus support services (e.g., disability accommodations) and other treatments (e.g., ADHD medication). For each service, participants first indicate whether they receive this service and then provide information about its frequency, duration, and effectiveness. In this study, participant use of disability accommodations, ADHD medication, medication for other medical/mental health conditions, and counseling was assessed.

Procedure

Students were recruited from multiple sources, including various campus support units (e.g., disability services, student health services, first-year summer orientation sessions, and campus fliers). All potential participants were made aware that this was a clinical trial for individuals with ADHD, and that ADHD status would be evaluated and confirmed prior to entry into the trial. Interested students contacted the project coordinators at each site and were initially screened for study eligibility by phone. Potentially eligible participants subsequently underwent a more comprehensive evaluation, during which information pertinent to determining eligibility for the study, as well as pretreatment outcome data, were collected.

Recruitment was ongoing, and ACCESS was delivered to five successive cohorts of participants across consecutive semesters from the fall of 2015 through the spring of 2018. Fall cohorts ran from early September through mid-November; spring cohorts from early February into mid-April. Treatment outcome data were collected from both groups on three occasions: within 2 weeks prior to beginning active treatment, immediately after active treatment, and in the final 2–3 weeks of the maintenance phase semester. While waiting to participate in ACCESS on a 1-year delayed basis, DTC participants were permitted to receive treatment as usual.

CBT group and mentoring sessions were conducted in campus-based clinic settings. Every effort was made to run CBT group meetings at times that maximized attendance; some students (n = 30) could not participate due to scheduling conflicts (e.g., classes, jobs). On average, four to six students participated in the CBT group portion of ACCESS. Groups were conducted using a discussion-based format to encourage active participation, and participants received written handouts summarizing important session content. Guest speakers from various campus support units (e.g., disability services, student health) met briefly with the groups to describe and answer questions about their services. Mentoring sessions were generally conducted in person within a few days following the corresponding group session; occasionally, when in-person sessions were not feasible (e.g., illness), mentoring was instead conducted by phone.

Graduate student research assistants and one master's-level licensed professional counselor served as group leaders and mentors. Prior to being in the study, all received extensive training that included assigned readings, group discussions, observations, and role playing. Supervision was provided to group leaders and mentors throughout the study by licensed doctoral-level clinical psychologists. Treatment fidelity was further enhanced through use of a treatment manual containing detailed session-by-session outlines that guided group leaders and mentors in their delivery of ACCESS. All treatment sessions were audio recorded, and 20% of these were randomly selected and reviewed for treatment fidelity by the group and mentor supervisors. Overall adherence to the content of treatment sessions was excellent, with fidelity ratings of 96.4 and 95.6% obtained for the group and mentoring sessions, respectively.

All study procedures were approved annually by each university's Institutional Review Board. In addition to receiving monetary compensation for completing measures, participants were given a written summary of their screening evaluation results, which could be used as documentation for receiving campus support and treatment (e.g., accommodations, medication).

Table 2. Outcome Data and Model Fit Indices

	Time 1		Time 2		Time 3		Model fit for multiple group models			
	M (SD)		*M (SD)*		*M (SD)*					
	n		*n*		*n*					
Outcome	**ACCESS**	**DTC**	**ACCESS**	**DTC**	**ACCESS**	**DTC**	**χ^2 (*df*)**	**CFI**	**SRMR**	**RMSEA [90% CI]**
CAARS Total	34.48 (9.16)	34.73 (8.82)	29.64 (9.28)	31.54 (10.43)	28.46 (9.48)	31.68 (9.48)	9.31 (7)	.99	.12	.05 [.00, .13]
	117	130	111	109	95	102				
IN	19.93 (4.57)	20.36 (4.45)	16.25 (5.20)	18.22 (5.70)	15.05 (5.24)	17.86 (5.28)	16.22 (7)	.94	.20	.10 [.04, .17]
	117	130	111	109	95	102				
HI	14.55 (5.74)	14.37 (5.61)	13.39 (5.32)	13.32 (6.23)	13.41 (5.57)	13.81 (5.89)	3.87 (5)	1	.06	.00 [.00, .11]
	117	130	111	109	95	102				
BRIEF GEC	157.17 (18.13)	155.62 (22.30)	145.86 (25.05)	154.00 (24.46)	140.39 (24.85)	150.01 (24.69)	9.09 (7)	.98	.25	.05 [.00, .13]
	118	131	113	111	93	100				
BRI	60.70 (11.22)	59.40 (11.05)	58.02 (12.28)	59.85 (11.95)	56.88 (11.86)	59.06 (11.95)	3.38 (7)	1	.10	.00 [.00, .06]
	118	131	113	111	93	100				
MCI	95.62 (14.71)	95.87 (14.84)	87.58 (15.23)	94.15 (15.18)	83.51 (15.07)	90.93 (15.48)	7.05 (5)	.96	.07	.06 [.00, .15]
	118	131	113	111	93	100				
BDI-II	14.60 (10.55)	14.82 (10.57)	12.97 (9.98)	18.47 (11.97)	13.12 (11.39)	16.19 (11.62)	7.80 (7)	.99	.08	.03 [.00, .12]
	119	131	113	113	95	103				
BAI	13.67 (11.79)	12.15 (10.29)	14.32 (11.40)	14.65 (11.38)	12.27 (10.53)	14.29 (12.04)	8.28 (5)	.98	.03	.07 [.00, .16]
	119	131	113	113	94	102				
TOAK	20.86 (6.19)	20.85 (6.23)	29.93 (4.86)	22.70 (5.68)	29.03 (5.00)	23.15 (5.63)	17.91 (5)	.93	.08	.14 [.08, .22]
	119	129	113	110	94	103				
SFS	46.74 (10.97)	44.74 (11.00)	61.16 (11.64)	48.84 (12.09)	61.18 (12.27)	49.58 (13.58)	6.33 (5)	.99	.09	.05 [.00, .14]
	119	131	112	113	93	104				
ACS-CV	36.27 (7.88)	36.03 (8.23)	32.93 (7.84)	35.77 (7.91)	31.91 (8.13)	35.54 (8.71)	4.43 (5)	1	.07	.00 [.00, .12]
	119	131	110	113	95	103				

Note. Outcome data reported in the original, unstandardized metric; CFI = comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; ACCESS = immediate treatment; DTC = Delayed Treatment Control; CAARS total = Conners Adult ADHD Rating Scale total score; IN = CAARS inattention; HI = CAARS hyperactivity-impulsivity; BRIEF GEC = Behavioral Rating Inventory of Executive Functioning Global Executive Composite; BRI = BRIEF Behavior Regulation Index; MCI = BRIEF Metacognition Index; BDI-II = Beck Depression Inventory–II; BAI = Beck Anxiety Inventory; TOAK = Test of ADHD Knowledge; SFS = Strategies for Success; ACS-CV = ADHD Cognitions Scale–College Version.

Results

Data Analytic Plan

Latent growth curve models, which allow for analysis of cases with missing data, were estimated to evaluate how treatment condition (immediate vs. delayed) influenced change over time. The models were estimated in Mplus 8.1 using maximum likelihood estimation with robust standard errors, which incorporates a model-based method for estimating parameters despite missing data (Enders, 2010). Scores for the three time points (preactive, postactive, and postmaintenance) served as the indicators. Latent intercept and slope factors were specified and allowed to covary. For the intercept, the three factor loadings were set to 1. For the slope, the first indicator (preactive) was fixed to zero, the second indicator was freely estimated, and the final indicator (postmaintenance) was fixed to 1. In this specification, the intercept value reflects initial preactive status, and the slope value reflects total growth from preactive (Time 1, coded 0) to postmaintenance (Time 3, coded 1).

A multiple-group framework was used to evaluate differential change over time. The immediate ACCESS and DTC conditions were specified as the two groups, and Wald tests of model constraints were used to test whether the slope means differed significantly between the two groups. Rarely were there significant effects of treatment condition on intercept values (i.e., pretreatment scores), consistent with random assignment to condition, and so these effects were omitted from the main text for clarity. Because the slopes were constrained to be equal, a significant model test indicates a rejection of the null hypothesis of equal slopes in the two group conditions. Within each group, the residual variances of the intercept and slope, as well as their residual covariance, were freely estimated. The residual variances of the slopes tended to be small, and in a handful of cases (e.g., BDI-II) they were fixed to 0 to facilitate convergence to proper solutions. The residual variances of the three indicators were constrained to be equal within each group to reflect homoscedasticity (Preacher et al., 2008). Initial growth analyses indicated that site differences had no impact on the trajectories for either group; thus, site was not included in the final growth models. Model fit for the multiple group models is displayed in Table 2, with the data reported in the original, unstandardized metric. Reported below for each outcome are effect sizes, expressed in the Cohen's *d* metric, representing the magnitude of the difference in slopes between the ACCESS and DTC conditions (i.e., the effect of condition on change). For the purposes of interpretation, Cohen's *d* values on the order of .20, .50, and .80 were considered small, medium, and large effects, respectively.

Primary Outcomes

ADHD Symptoms

The immediate ACCESS ($b = -6.16$, $SE = .82$, $p < .001$) and DTC ($b = -2.90$, $SE = .66$, $p < .001$) groups showed significant declines in overall ADHD symptomatology as measured by CAARS Total ADHD scores, with the decline being significantly greater in the ACCESS condition, Wald (1) = 9.78, $p = .002$, $d = .39$ [.15, .65]. The ACCESS ($b = -4.83$, $SE = .52$, $p < .001$) and DTC ($b = -3.32$, $SE = .38$, $p < .001$) groups also showed significant declines in inattention symptoms as measured by CAARS IN scores, with a significantly larger decline

observed among ACCESS participants, Wald (1) = 16.08 $p < .001$, $d = .50$ [.25, .76]. As shown in Figure S1 (in the online supplemental materials), these reductions in ADHD symptoms were evident at the end of the active phase and remained stable throughout the maintenance phase of the intervention. In contrast with the marginal decline in hyperactive-impulsive symptoms (CAARS HI scores) shown by the DTC condition ($b = -.64$, $SE = .34$, $p = .060$), the ACCESS group showed a significant decline ($b = -1.32$, $SE = .43$, $p = .002$); the slopes, however, did not differ between these groups, Wald (1) = 1.50, $p = .220$, $d = .16$ [−.09, .41].

Executive Functioning

In terms of overall EF deficits as measured by BRIEF-A GEC scores, the DTC condition showed a marginal decline ($b = -3.31$, $SE = 2.02$, $p = .101$), whereas the immediate ACCESS group ($b = -16.69$, $SE = 2.28$, $p < .001$) showed a significant decline and its slope was significantly greater than that of the DTC condition, Wald (1) = 22.32, $p < .001$, $d = .56$ [.31, .81]. In contrast with the DTC group that displayed no change in behavioral regulation deficits as measured by BRIEF-A BRI scores ($b = .14$, $SE = .85$, $p = .867$), the ACCESS group ($b = -4.17$, $SE = .98$, $p < .001$) showed a significant decline and the slopes differed significantly between the conditions, Wald (1) = 10.78, $p = .001$, $d = .43$ [.17, .68]. Regarding metacognition deficits (BRIEF-A MCI scores), there were significant declines in both the ACCESS group ($b = -11.26$, $SE = 1.82$, $p < .001$) and the DTC condition ($b = -3.14$, $SE = 1.59$, $p = .049$), but the decline for ACCESS participants was significantly greater, Wald (1) = 18.25, $p < .001$, $d = .43$ [.18, .68]. For all three BRIEF-A measures, these improvements in EF were evident at the end of the active phase and remained stable throughout the maintenance phase of ACCESS (see Figure S2 in the online supplemental materials).

Emotional Functioning

Analyses of the BDI-II revealed no significant reductions in depression symptoms for either the ACCESS ($b = -.77$, $SE = .74$, $p = .297$) or DTC groups ($b = 1.81$, $SE = 1.14$, $p = .111$), and the slopes did not differ significantly, Wald (1) = 2.13, $p = .145$, $d = .24$ [−.01, .49]. Analyses of BAI scores indicated that there was a significant increase in anxiety for the DTC group ($b = 2.78$, $SE = .98$, $p = .005$), but no change in the ACCESS condition ($b = -1.10$, $SE = 1.16$, $p = .346$); the slopes between groups differed significantly, Wald (1) = 6.22, $p = .013$, $d = .33$ [.08, .58]. Although emotional functioning did not improve, it is of clinical interest to note that depression and anxiety levels seemed to stabilize for ACCESS participants, while worsening for DTC participants (see Figure S3 in the online supplemental materials).

Secondary Outcomes

Clinical Change Mechanisms

The immediate ACCESS ($b = 8.29$, $SE = .53$, $p < .001$) and DTC ($b = 1.99$, $SE = .41$, $p < .001$) groups showed significant growth in their knowledge of ADHD as measured by TOAK scores. This increase in ADHD knowledge was significantly greater among ACCESS participants, Wald (1) = 102.24, $p < .001$, $d = 1.21$ [.94, 1.48]. The immediate ACCESS ($b = 14.50$, $SE = 1.33$, $p < .001$) and DTC ($b = 4.11$, $SE = .97$, $p < .001$) groups also showed significant growth in their use of behavioral strategies as measured by SFS scores, with the increase being significantly larger

in the ACCESS condition, Wald (1) = 42.24, $p < .001$, $d = .81$ [.56, 1.07]. Analyses of maladaptive thinking as measured by ACS-CV scores indicated that the DTC group did not significantly change over time ($b = -.44$, $SE = .63$, $p = .487$). The ACCESS condition did change significantly over time ($b = -4.24$, $SE = .74$, $p < .001$), and this decline in maladaptive thinking was significantly greater for the immediate ACCESS participants, Wald (1) = 15.57, $p < .001$, $d = .50$ [.25, .75]. As shown in Figure S4 (in the online supplemental materials), these improvements in clinical change mechanisms were evident at the end of the active phase and remained stable throughout the maintenance phase of ACCESS.

Service Utilization

A descriptive summary of participants' use of treatment and other support services appears in Table 3. Because these outcomes are categorical, scored 0 and 1, an alternate model specification was used. Growth curve models with categorical indicators do not afford the same markers of model fit and estimating a multiple-group model is much less straightforward for categorical outcomes. As before, latent intercept (1, 1, 1) and slope (0, *, 1) factors were estimated, and the residual variances and covariance for the intercept and slope were freely estimated. Treatment condition was included as an observed predictor (coded 0 = delayed, 1 = immediate). This model thus estimates the overall slope for the entire sample, along with how treatment status predicts variation in the slope.

Table 3. Service Utilization by Group Over Time

Service	% Preactive	% Postactive	% Postmaintenance
Disability services			
ACCESS	25.3	67.3	60.9
DTC	22.1	37.5	38.0
ADHD medication			
ACCESS	53.3	68.9	67.0
DTC	41.7	59.4	71.9
Other medication			
ACCESS	26.1	24.0	30.1
DTC	29.1	32.4	37.6
Counseling services			
ACCESS	33.7	25.3	34.5
DTC	52.4	39.4	45.1

Note. Disability services = use of formal disability accommodations approved by campus disability office; ACCESS = immediate treatment; DTC = Delayed Treatment Control; ADHD = attention deficit/hyperactivity disorder; ADHD medication = use of medication to treat ADHD; Other medication = use of medication to treat other mental health and medical conditions; Counseling services = use of counseling received outside of ACCESS program.

The sample overall did not change in its use of disability service accommodations over time, $b = .39$, $SE = .49$, $p = .415$, but treatment status significantly moderated change, with the immediate ACCESS condition showing a significant increase in using disability services, $b = 1.96$, $SE = .58$, $p = .001$, $d = 1.03$ [.48, 1.59]. Although the sample overall increased its use of ADHD medication, $b = 3.16$, $SE = 1.39$, $p = .022$, treatment status did not significantly moderate this change, $b = -.81$, $SE = 1.24$, $p = .513$, $d = .18$ [−.32, .68]. There was no change in overall sample use of medications for other medical and mental health conditions, $b = 1.36$, $SE = 12.00$, $p = .910$, and treatment status did not significantly moderate the slope, $b = -.58$, $SE = 1.75$, $p = .740$, $d = .25$ [−1.02, 1.52]. Likewise, the sample overall did not change in its use of counseling

services delivered outside of ACCESS, $b = -.20$, $SE = .28$, $p = .468$, and treatment status did not significantly moderate the slope, $b = -.03$, $SE = .20$, $p = .900$, $d = .13$ [−1.40, 1.66].

Clinical Significance of Findings

To inform clinical practice, reliable change indices (RCI; Jacobson & Truax, 1992) were calculated to determine individual rates of response to treatment. Preactive to postmaintenance phase difference scores were used for these calculations, with positive differences reflecting desired therapeutic change for all outcome measures. Consistent with the Jacobson and Truax (1992) guidelines, RCIs greater than 1.96 represented evidence of statistically significant improvement. Although positive RCIs ≤1.96 can reflect improvement, these changes are not of a magnitude to be considered statistically significant and therefore are likely due to chance. Because individuals with ADHD are at increased risk for displaying deterioration in their functioning (Barkley, 2015), a third clinical significance category was generated, operationally defined as RCIs <0, to examine outcomes reflecting a worsening in functioning over time.

Table 4. Treatment Response Classifications Based on Reliable Change Indices

Outcome	% Worse	% Improved	% Reliable improvement	χ^2
CAARS IN				
ACCESS	12.9	25.8	61.3	17.55***
DTC	22.5	46.1	31.4	
BRIEF-A GEC				
ACCESS	22.6	26.9	50.5	9.89**
DTC	40.0	30.0	30.0	
BDI-II Total				
ACCESS	37.9	41.1	21.1	6.22*
DTC	54.4	26.2	19.4	
BAI Total				
ACCESS	42.6	46.8	10.6	6.93*
DTC	52.0	46.1	2.0	
TOAK Total				
ACCESS	5.3	51.1	43.6	35.89***
DTC	22.5	68.6	8.8	
SFS Total				
ACCESS	9.7	58.1	31.2	18.45***
DTC	27.6	62.2	10.2	
ACS-CV Total				
ACCESS	23.2	65.3	11.6	8.07*
DTC	41.7	51.5	6.8	

Note. CAARS IN = Conners Adult ADHD Rating Scale Inattention; DTC = Delayed Treatment Control; BRIEF-A GEC = Behavioral Rating Inventory of Executive Functioning–Adults Global Executive Composite; BDI-II = Beck Depression Inventory; BAI = Beck Anxiety Inventory; TOAK = Test of ADHD Knowledge; SFS = Strategies for Success; ACS-CV = ADHD Cognitions Scale–College Version.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Higher rates of reliable improvement among immediate ACCESS participants were revealed by χ^2 analyses of the observed RCI distributions (see Table 4), in terms of inattention (61.3 vs. 31.4%), EF (50.5 vs. 30.0%), anxiety (10.6 vs. 2.0%), knowledge of ADHD (43.6 vs. 8.8%), and use of behavioral strategies (31.2 vs. 10.2%). Although rates of reliable improvement were essentially equivalent for immediate ACCESS and DTC participants with respect to depression

and maladaptive thinking patterns, higher percentages of DTC participants displayed a worsening in their reports of both depression (54.4 vs. 37.9%) and maladaptive thinking (41.7 vs. 23.2%). Further evidence of this increased risk for a deterioration in functioning among DTC versus immediate ACCESS participants was also seen among the distributions for inattention (22.5 vs. 12.9%), EF (40.0 vs. 22.6%), anxiety (52.0 vs. 42.6%), knowledge of ADHD (22.5 vs. 5.3%), and behavioral strategy use (27.6 vs. 9.7%).

Discussion

Findings from this large-scale multisite RCT revealed numerous improvements in functioning among the college students with ADHD who received ACCESS on an immediate versus delayed basis. In terms of primary outcomes, immediate ACCESS participants displayed statistically significant greater declines in their overall ADHD symptomatology, which was driven largely by a decline in their self-reported inattention symptoms. Effect sizes associated with these differences were medium in strength (Cohen's *d* ranging from .39 to .50). Immediate ACCESS participants also displayed statistically significant improvements in executive functioning (EF), with medium effect sizes noted for overall EF deficits ($d = .56$), as well as for EF deficits pertaining specifically to behavioral regulation ($d = .43$) and metacognition ($d = .43$) skills. Contrary to study expectations, neither group exhibited a statistically significant decline in overall levels of depression. Although immediate ACCESS participants did not show a significant decline in overall levels of anxiety, there was a significant increase in anxiety for the DTC group. The slopes between the two groups were significantly different, thus suggesting a significant worsening of anxiety symptoms among DTC participants.

Examination of hypothesized mechanisms of clinical change and participant service utilization also revealed statistically significant differences between the groups. Although both groups showed increases over time in their knowledge of ADHD and use of behavioral strategies, these increases were significantly greater for participants in the immediate ACCESS group versus the DTC condition. Effect sizes associated with these group differences were large, with Cohen's *d* estimates of 1.21 and .81 for ADHD knowledge and behavioral strategies, respectively. The immediate ACCESS group also displayed a significantly greater decline in maladaptive thinking than the DTC condition, with the difference between the groups being of moderate effect size ($d = .50$). Such improvements in ADHD knowledge, use of behavioral strategies, and adaptive thinking skills, as measured by our study-specific measures, speak to their potential role as clinical change mechanisms, lending support to the construct validity of our design. In terms of service utilization, group status moderated use of disability services, with immediate ACCESS participants displaying a significant increase in their use of disability accommodations. Both groups exhibited significantly increased use of ADHD medications over time, but this increase was not moderated by group status. The fact that both groups increased their use of ADHD medication may have been facilitated by participants' receipt of written screening evaluation summaries that could be used as documentation for receiving such services. Neither group, however, displayed statistically significant increases in their use of medication for other mental health conditions or in their participation in counseling outside of ACCESS.

Our clinical significance analyses, which address therapeutic change at the level of individuals rather than group aggregates, also revealed findings in line with study expectations. Relative to

DTC participants, higher percentages of immediate ACCESS participants displayed reliable improvements in multiple domains of functioning, including self-reported inattention symptoms, executive functioning, anxiety symptoms, knowledge of ADHD, and use of behavioral strategies. Of additional clinical significance are findings at the other end of the continuum. Specifically, higher percentages of DTC participants displayed a worsening in their functioning relative to immediate ACCESS participants in terms of inattention, executive functioning, depression, anxiety, knowledge of ADHD, behavioral strategy use, and maladaptive thinking. Such evidence of a deterioration in functioning is not completely unexpected, given what is known about the deleterious impact of ADHD across the life span (Barkley, 2015). What is surprising, and at the same time sobering, is the magnitude of the worsening and the fact that it occurred within a relatively short 12-month time frame among DTC participants who could and did receive treatments other than ACCESS (e.g., ADHD medication).

Although it is clinically meaningful that ACCESS participants were less likely to experience a worsening in their depression and anxiety symptoms according to the RCI results, their failure to improve in these domains was somewhat surprising. This lack of improvement could be due to the timing of when the adaptive thinking portion of ACCESS directly addresses emotional functioning. Because this occurs in Week 5 of the 8-week active phase (see Figure 1), ACCESS participants may not have had enough time to master the adaptive thinking skills necessary for bringing about improvements in depression and anxiety. Assuming this to be the case, one option for addressing this would be to identify participants with elevated pretreatment levels of depression/anxiety and to have mentors begin targeting these emotional features at an earlier stage of ACCESS. Mentors could also encourage depressed/anxious participants to seek out and concurrently receive more intensive individual CBT counseling outside of ACCESS. Such recommendations are in keeping with the notion that ADHD is best managed via multimodal interventions (Barkley, 2015). In this regard, ACCESS is well suited to being used in combination with other treatments (e.g., medication, accommodations, counseling) to address the multiple psychosocial needs of emerging adults with ADHD attending college.

Despite the encouraging nature of the obtained findings, it remains necessary to acknowledge limitations that have bearing on conclusions drawn from this RCT. For example, the primary and secondary outcome measures reported in this article were somewhat limited in scope and based exclusively on self-report. As noted earlier, our RCT did include measures examining other outcomes (e.g., academic, general daily functioning) but space limitations precluded their inclusion in the current article. These will be addressed subsequently, including analyses of more objective measures of academic functioning drawn from educational records (see Appendix). Two additional issues not addressed in this article are: (a) the temporal stability of treatment-induced improvements following termination from ACCESS, and (b) the potential moderating effects of sex/gender, race/ethnicity, and variables of clinical interest (e.g., comorbid features) on response to treatment. Both issues will be thoroughly examined in a subsequent article focused on the treatment response of immediate ACCESS participants, for whom outcome data are available not only from the active and maintenance phases, but also from a follow-up assessment (see Figure 2) conducted 6 months after participation in ACCESS had been completed. The fact that immediate and delayed treatment participants could receive other forms of treatment while participating in the study makes it difficult to ascertain the unique contribution that ACCESS made to observed improvements in outcome. Evidence indirectly suggesting that ACCESS did

indeed contribute to treatment gains may be inferred from the absence of group differences in their use of other treatments (i.e., ADHD medication, medication for other mental health conditions, counseling services). Another potential limitation affecting the external validity of these findings is the gender distribution of our sample (66% female), which differs from the relatively higher proportion of males known to have ADHD in the general population. The reasons for this discrepancy are not entirely clear, but it is first important to note that the gender distribution of our sample is in line with the 60–67% representation of female undergraduates at our two sites. Also speaking to this issue is the fact that longitudinal research has shown that females with ADHD generally attain more years of formal education than do males with this same condition (Barkley et al., 2008).

Bearing these limitations in mind, findings from this large multisite RCT study build upon those reported from our earlier open clinical trial (Anastopoulos & King, 2015; Anastopoulos et al., 2018) and provide strong evidence in support of the efficacy of ACCESS as a treatment for emerging adults with ADHD attending college. Although ACCESS shares features found in other psychosocial treatments for college students with ADHD (e.g., CBT, OTMP, coaching), it uniquely blends many of these components together into a single treatment package that is further enhanced by the inclusion of novel treatment elements, such as: an intensive ADHD knowledge component to give college students a developmentally appropriate understanding of their own ADHD; simultaneous delivery of group treatment and individual mentoring to facilitate acquisition and mastery of new knowledge and skills; and a longer duration of treatment (i.e., active and maintenance phases delivered across two semesters) to better address the chronic nature of ADHD. Given the clinically challenging nature of the college students in the study and the rigor with which ADHD and comorbid conditions were identified in our multisite sample, it is likely that ACCESS is well-suited to addressing the needs of other students with ADHD in postsecondary settings. Its feasibility as a treatment option stems in part from a consideration of the fact that participation in ACCESS was quite high during the active treatment phase: 83.2% attended at least six of eight planned group sessions; 85.7% attended a comparable number of mentoring sessions. Also speaking to its feasibility is that ACCESS was implemented in two different university settings with the strong support of campus support staff. Thus, our findings represent an important first step in closing the gap from research to practice. Left to future research is the task of determining how effectively ACCESS can be disseminated in other college settings, especially those in which resources (e.g., disability services) and staffing (e.g., level of ADHD expertise) may differ from those of the two sites in the current study, thereby potentially requiring minor changes in staff training and program implementation.

In conclusion, college students with ADHD are at increased risk for a multitude of educational and psychosocial difficulties that have serious personal, institutional, and public health implications, not only during college, but also during the transition into a postcollege world where demands for self-regulation are greater. To reduce this risk, it is important for college students with ADHD to have ready access to evidence-based treatment. Building on the results of our open clinical trial, findings from the current RCT suggest that ACCESS is a promising new evidence-based treatment that can play an important role in the overall clinical management of college students with ADHD.

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Appendix

The data reported in this article have not been previously published but were collected as part of a larger data collection effort (at one or more points in time). Additional findings from this larger data set have been reported in a second article currently under editorial review. Both articles examine the efficacy of the ACCESS intervention but address conceptually different outcomes. The current article addresses treatment-induced changes in primary ADHD symptoms, associated executive functioning and emotional features (i.e., depression, anxiety), clinical change mechanisms, and service utilization. The second article focuses exclusively on functional outcomes, in terms of treatment-induced changes in both educational functioning (i.e., grade point average, number of semester credits attempted, self-reported learning and study strategies) and daily functioning (i.e., general well-being, daily functioning and performance, relationships and communication).