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Cognitive-Behavioral Therapy for ADHD in College: Recommendations “Hot Off the Press”

Laura E. Knouse, Ph.D.

ADHD leads to impairment across the lifespan including during the college years. An increasing number of studies document the academic, social, and psychological impairments associated with the disorder in college (DuPaul, Weyandt, O'Dell, & Varejao, 2009). Yet, until very recently, there were no published studies on cognitive-behavioral treatment approaches specifically tailored to college students with ADHD. Over the past year, however, four research groups have published work on skills-based cognitive-behavioral treatments for this population. My goal in this article is to briefly summarize these find-

ings and to identify key recommendations for clinicians working with college students with the disorder that emerge across studies. In addition, I will integrate findings from basic research on ADHD and memory strategies that my colleagues and I have recently completed and make the case for inclusion of these strategies into skills-based ADHD treatments for college students.

It is now fairly well established that skills-based, cognitive-behavioral treatment (CBT) approaches can be efficacious for adults with ADHD (Knouse & Safren, 2014). Depending on one's interpretation of the American Psycho-

logical Association Division 12's criteria for empirically supported treatments, based in particular upon the studies conducted by Safren and colleagues (2010) and Solanto and colleagues (2010), CBT for adult ADHD meets criteria as at least a “probably efficacious treatment.” Across studies, teaching adults with ADHD to consistently use specific compensatory behavioral skills (e.g., organization and planning) and to recognize and cope with the thinking patterns that block the use of those skills has been shown to reduce the impact of symptoms. Likewise, specific training in the use of organization and planning

skills has been shown to help the functioning of both children (Abikoff et al., 2013) and adolescents (Langberg, Epstein, Becker, Girio-Herrera, & Vaughn, 2012) with ADHD in the academic setting. Yet only recently have studies of specific applications with college students been published, although the subject has been covered in the clinical practice literature (e.g., Ramsay & Rostain, 2006). Importantly, these recent studies are adaptations of existing skills-based CBT approaches for adults more generally. There are good reasons to predict that modifications to general adult protocols for ADHD treatment would be necessary to achieve optimal results, including the unique developmental context of emerging adulthood (see Fleming & McMahon, 2012, for a review) and the heavy cognitive and organizational load that students must carry. Each of these research groups has taken an independent course in adapting existing interventions, and thus examining these studies for points of convergence can provide useful information for clinicians working with this population.

Summary details of four recent studies are presented in Table 1. The studies represent a variety of choices in terms of research design and clinical approach. Readers are invited to examine Table 1 to get a general sense of the approaches and findings from each study and may access each manuscript if they would like more details. Taken together, these studies demonstrate that tailored CBT approaches for college students with ADHD can have a positive impact on inattentive symptoms in particular and on academic functioning and use of skills.

Some clinical take-homes from these studies include:

- Fit the treatment to the contours of the semester
- Measure skill use and functioning, not just symptoms
- Consider the power of the group
- Provide more frequent cues and support
- Choose skills suited to the professional learner

FIT THE TREATMENT TO THE CONTOURS OF THE SEMESTER

The first theme emerging across these studies is the importance of timing the CBT intervention so that it fits within the constraints of the academic semester. Interestingly, the four research groups appear to independently have determined that an intervention 8–10 weeks in length (mean of 8.5 weeks, to be precise) starting a few weeks into the semester is ideal for this purpose. Several researchers emphasize the importance of starting early enough in the semester to get some skills in place before the high-stress periods of midterms and final exams while still allowing sufficient time for recruitment and pre-screening at the start of the semester. In their chapter on CBT for college students, for example, Ramsay and Rostain (2006) suggest using the finals period as a sort of final exam for the skills learned in CBT across the semester; Fleming, McMahon, Moran, Peterson, and Dreessen (2014) similarly coached their clients to prepare for the “high demand period” at the end of the semester using previously practiced strategies.

However, clinicians in college counseling centers have little control over when clients with ADHD seek services, and students often wait until the situation is exceedingly dire—often, at the end of the semester—before seeking help. However, if a clinic offered a structured CBT program for students with ADHD each semester, as described above, then students who present to the clinic “in crisis” right before finals could be strongly encouraged to enroll in the more structured program the following semester.

MEASURE SKILL USE AND FUNCTIONING, NOT JUST SYMPTOMS

Measuring treatment outcomes as often as weekly is an important element of CBT approaches even when they are not part of a formal research study. Many CBT clinicians employ short, symptom-based rating scales for this purpose. Results from recent studies suggest that clinicians (and researchers!) should consider expanding their assessments to include skill use and functioning. To

address skill use first, at the heart of CBT for adult ADHD lies the idea that—with practice and support—clients can learn behavioral skills and cognitive strategies to work around their ADHD symptoms even when those symptoms persist into adulthood (Knouse, 2015). All of the treatment approaches reviewed here aim to help clients learn specific skills that will accomplish this goal, and, consistent with the mechanism of action for CBT, several researchers specifically measure the extent to which clients are using behavioral and cognitive skills. For example, Anastopoulos and King (2015) measured and demonstrated pre-to-post changes in ADHD knowledge, behavioral skill use, and changes in maladaptive cognitions, as each of these were hypothesized mechanisms of change in their intervention. Clinically, having clients complete formalized assessments of skill use during treatment could serve a self-monitoring function and may increase clients’ self-efficacy as they see evidence that their behaviors are changing even though their symptoms may still present challenges.

The recent studies also indicate that measuring improvements in functioning in addition to symptoms may be both important and useful. First, functional outcomes may be more in line with clients’ goals for themselves. Eddy, Will, Broman-Fulks, and Michael (2015) noted that 3 of the 4 clients in their case series prioritized the functional goals of being able to get work done efficiently rather than goals framed in terms of symptom reduction. They also found that some clients reported significant improvements in functioning after treatment even when there was little movement on symptom-based ratings scales. Thus, assessments of functioning may not only be more meaningful to the client but may be more sensitive to treatment-related change.

Busy college counseling centers require assessment tools that are time-efficient, and therefore rating scales tend to be preferred. To assess functioning, both LaCount, Hartung, Shelton, Clapp, and Clapp (2015) and Eddy and colleagues (2015) used the Weiss Functional Impairment Rating Scale (Weiss, 2000), which may be a helpful tool to

TABLE 1. Recent Studies on CBT for College Students with ADHD

Study	Treatment Approach	Research Design & Participants	Findings	Notes
Anastopoulos & King (2015)	8 weekly group CBT sessions and individual mentoring sessions	Open trial across 3 semesters	Significant increases in ADHD knowledge ($d = 2.23$); Behavioral strategies ($d = 1.04$); and on one of two measures of adaptive thinking ($d = .97$)	"ACCESS is best viewed as an integral component of an overall multimodal treatment approach that includes other interventions (e.g., medication management, counseling, tutoring)."
	Content adapted from Safren et al. (2005) and Solanto et al. (2011)	43 enrolled; post-treatment data for 40	Significant decreases in self-reported inattentive symptoms	
	Booster sessions offered the following semester	86% attended 80%+ group sessions; 84% for mentoring portion	Percent using disability services increased from 19% to 57%	
	Each group session included ADHD knowledge, behavioral skills, and cognitive therapy			
	Focus on increasing client use of campus support services			
	Mentoring focused on skills application, goal-setting, and monitoring			
Eddy, Canu, Broman-Fulks, & Michael (2015)	8 weekly individual CBT sessions adapted from Safren et al. (2005)	Case series of 4 participants assessed at Sessions 1 and 8	Treatment attendance and satisfaction were high for all participants	3 of the 4 participants articulated their top treatment goal as working more efficiently rather than reducing ADHD symptoms, per se
	One support telephone call per week to target skill application and to provide a reminder for the next session			
	Client workbook			
LaCount, Hartung, Shelton, Clapp, & Clapp (2015)	10 weekly individual and group sessions adapted from Safren et al. (2005)	Open trial of 17 undergraduate and graduate students; 12 (70%) completed post-intervention measures	For completers, significant decreases in self-reported inattentive symptoms ($d = .93$)	Future directions include examining effects of treatment components (individual vs. group; specific skills); see text for description of recent study along these lines
	Group components provided social support and greater exposure to material	Completers attended 85% of individual sessions and 77% of group sessions	Significant reductions in impairment at school ($d = .51$) and at work ($d = .63$)	
	Individual sessions focused on each client's individual goals and skills practice (homework)			
Fleming, McMahon, Moran, Peterson, & Dressen (2015)	8 weekly group sessions with 10–15-minute coaching telephone calls	Randomized controlled trial comparing 17 participants receiving intervention to 16 participants receiving handouts covering ADHD self-management skills	Both groups significantly improved in their DSM-IV inattentive symptoms post-treatment; trend toward greater improvement in the treatment group ($d = .55$)	Clinical response rate to the handout control condition (25%) was comparable to rates achieved with active treatment controls (e.g., supportive group therapy) suggesting its potential as a low-cost intervention
	1 booster session at the start of the following quarter	Participants in the treatment group attended 88% of sessions with one drop-out	At 3-month follow-up, treatment group had significantly lower inattentive symptoms ($d = .81$)	
	Based on dialectical behavior therapy: emphasized mindfulness skills but more heavily integrated organization and planning skills than typical DBT		Treatment group showed significantly greater improvements in quality of life at post-treatment ($d = .90$) and gave high helpfulness ratings to most treatment components	
	Designed to fit developmental context of emerging adults (e.g., peer support)			

use in clinical practice. With respect to skills, well-established commercially available measures like the Learning and Study Strategies Inventory (LASSI; Weinstein & Palmer, 2002) could be useful for showing treatment-related change but may be too burdensome for frequent use. To measure utilization of skills like calendar use and goal setting, Anastopoulos and King (2015) developed the 30-item Strategies for Success scale. Likewise, Solanto and colleagues (2010) developed the 24-item On Time Management, Organization, and Planning Scale (ON-TOP) to measure use of skills in their trial of group CBT for adults. Clinicians could seek out these or similar scales to use with clients in CBT or could choose a customized list of items tapping the skills that each client will target in therapy. Regardless of the method, tracking progress in treatment using multiple methods gives both clinician and client more information to use in shaping the treatment as it evolves and in highlighting the results of the client's efforts, providing reinforcement for behavior change.

CONSIDER THE POWER OF THE GROUP

Group treatments offer several advantages, some of which may be even more salient for college students. Three of the recent studies used a group format, either as the primary intervention (Fleming et al., 2015) or in tandem with individual sessions (Anastopoulos & King, 2015; LaCount et al., 2015) to create a multimodal treatment. Given the importance of peer relationships during this developmental period (Fleming & McMahon, 2012), LaCount and colleagues (2015) note that the group context provides an opportunity to reduce ADHD-related stigma through contact with students struggling with similar issues. Further, college students are likely to have experiences and daily challenges more similar to one another than to a group of adults from the general population, increasing the opportunity for empathy, social support, and especially modeling of skill use within the group (LaCount et al., 2015). In my own clinical experience, the group context also helps reluctant students accept the fact that they need to use skills and do

things differently than their peers without ADHD—a struggle noted by others working with college students (Ramsay & Rostain, 2006; Anastopoulos & King, 2015). And as noted by Anastopoulos and King (2015), allowing students to interact and support one another outside of the group can be a way to embed social cues for skill use in the environment more frequently throughout the week. (Clinicians should of course lay out the ground rules for confidentiality within the group and facilitate discussion within the group about whether the members would like to interact outside the group context.) Further, the students themselves can introduce new skill tips and tricks to the group and provide testimonials about their own successes and struggles using the techniques.

In addition to affording certain therapeutic advantages, groups are certainly time- and cost-effective, which is an important consideration in college counseling centers with limited resources. Yet groups are not without their own unique challenges. First, since CBT skills groups are usually highly structured, the therapist must have the ability to skillfully guide members back on track when they get off topic. Setting expectations about the structured nature of the group up front is exceedingly important in this regard. Second, because members may feel less of a personal stake in the group than they do in individual therapy, therapists should emphasize the importance of attendance and the importance of each group member to the overall success of the group therapeutic endeavor. Relatedly, the therapist needs to be sensitive to the engagement of all members in the group process and allow time for each to discuss his or her experiences and the results of skills practice from the prior week.

In order to provide individualized attention to clients while capitalizing on the advantages of the group, LaCount and colleagues (2015) and Anastopoulos and King (2015) developed interventions with both group and individual components. For both research groups, the goals of the individual component were to focus on each client's application of the skills covered in group therapy and to aid the client in setting concrete

goals and monitoring progress toward those goals (e.g., completion of weekly therapy homework assignments). Thus, adding an individual component to a group-based intervention allows for more individualized trouble-shooting of skill use and greater accountability for students to follow through on skills practice. In these studies, graduate students served as individual therapists. However, at schools without graduate programs or with fewer resources, individual peer coaching (Zwart & Kallemyrn, 2001) centering around skill application and goal-setting combined with therapist-led groups might be a feasible alternative.

PROVIDE MORE FREQUENT CUES AND SUPPORT

A week is a long and action-packed period of time in the life of a college student, and many students with ADHD find it difficult to maintain their engagement with newly learned skills between sessions. All of the recently developed treatments addressed this challenge by providing some form of reminders or cues for skills use between weekly sessions. As mentioned above, two treatments involved full individual therapy components in addition to group sessions. Eddy and colleagues (2015) provided individual therapy augmented with one supportive telephone call per week between sessions. The purpose of the call was to provide guidance with skills and homework assignments as needed, as well as to remind the participant of his or her next appointment. Participants also received the *Mastering Your Adult ADHD* workbook (Safren, Sprich, Perlman, & Otto, 2005) to guide their between-session practice. Fleming and colleagues (2015) also provided 10–15 minute coaching telephone calls that focused on helping clients apply and generalize the skills learned in the 90-minute group sessions to their daily lives. Thus, each of these clinical research groups has recognized the importance of treatment components that help clients generalize skills beyond the weekly therapy session. (As I often say to my clients, the therapy hour is less than 1% of your week, and if nothing changes outside of that hour, we have missed the boat!)

In addition to individual sessions, peer coaching or mentoring, and coaching telephone calls, there may be other creative ways to help college students generalize skills to their daily lives. Technology may provide some helpful, low-cost routes. For example in a CBT skills group that I ran, I sent short emails mid-week containing self-monitoring questions clients could ask themselves regarding their use of skills so far that week and brief coaching about either maintaining skills or getting back on track. Since many students carry smartphones with them, short emails (short = more likely to be read) or text messages may be a useful way to provide accessible cues. Clients can also be coached to cue themselves by using the calendar and alarm features on their smartphones to set reminders for skill check-ins, as suggested by Safren and colleagues (2005). More frequent and intense support for skill application in daily life is often needed to help clients generalize outside the clinic, and even clinicians in settings with fewer resources can find opportunities to cue skills outside of session.

CHOOSE SKILLS SUITED TO THE PROFESSIONAL LEARNER

In many ways, college is not like the “real world.” Some aspects of life may be relatively less burdensome (e.g., handling daily responsibilities like cooking and home maintenance, although many college students also manage households, work full-time for pay, and take care of family members. Thus treatment must always be tailored to the needs of each client.). Others may be more intense and challenging (coordinating and completing assignments requiring disparate skill sets; learning, retaining, and applying large amounts of different types of information over varying lengths of time—all while resisting numerous opportunities for procrastination). Recognizing the unique challenges of college for students with ADHD, each research group made adaptations to the *content* of the adult-focused interventions they based their treatments upon (see Table 1).

First, several authors highlight the need to intensely target procrastina-

tion and avoidance patterns in college students. Ramsay and Rostain (2006) highlight the role of procrastination and avoidance as responses to task-related anxiety and maladaptive thoughts that compound functional impairment in the long-term. In their case series, Eddy and colleagues (2015) recommend moving content and skills related to procrastination to the very beginning of treatment and highlighted the role of cognitive reappraisal skills in reducing anxiety and cueing active skill use instead of avoidance—a point also emphasized by Anastopoulos & King (2015). The mindfulness skills taught by Fleming and colleagues (2015) in their DBT approach can also be used in the service of reducing the automatic, reactive avoidance triggered by negative thoughts and emotions (Knoise & Mitchell, 2015).

Second, every study described here placed heavy emphasis on organization, time-management, and planning skills to help college students manage and balance the diverse tasks that demand their attention. These skills are at the heart of CBT for adults in general (Safren, Perlman et al., 2005; Solanto, 2011) and should also be a core component of work with college students. In fact, in an interesting next-step study recently presented at the annual conference for the Association for Behavioral and Cognitive Therapies (ABCT), LaCount, Hartung, and Shelton (2014) reported results from a trial of a very brief (3-session) group-based intervention adapted from Solanto (2011) and focusing only on organization and time management skills (scheduling, breaking down tasks and self-reward, prioritizing and task lists). Recruiting undergraduates with elevated scores for ADHD symptoms and impairment, LaCount and colleagues (2014) found that relative to a comparison group ($n = 16$), the group receiving the brief intervention ($n = 25$) showed a significant reduction in Inattentive symptoms of ADHD. Means were also in the hypothesized direction on a measure of organization, time-management, and planning skills, although the differences did not reach significance. The study demonstrated that even a brief intervention

targeting critical areas of impairment for people with ADHD may be helpful and further supports the importance of organization, time-management, and planning skills in helping college students with ADHD function more effectively.

Finally, I would like to suggest that researchers and clinicians working with college students with ADHD consider incorporating specific empirically supported study skills and strategies into their CBT work. Only one of the treatment approaches reviewed here, that of Anastopoulos and King (2015), appears to have incorporated specific study skills and strategies: one session each containing information on getting the most from classes, studying effectively, and strategies for taking exams. To conclude this article, I would like to present the case for more frequent incorporation of study strategies into CBT for college students with ADHD—specifically, the strategy of retrieval practice, or test-enhanced learning.

As professional learners, college students are tasked with encoding, retaining, and retrieving larger amounts of more diverse information than perhaps at any other point in their adult lives. For much of this learning, it is incumbent upon the student to choose the timing and frequency of study as well as the learning techniques to be employed. Critically, in basic research on memory, adults with ADHD tend to show the most substantial memory deficits when tasks require such self-regulated, effortful memory encoding (Holdnack, Moberg, Arnold, Gur, & Gur, 1995; Roth et al., 2004; Seidman, Biederman, Weber, Hatch, & Faraone, 1998). For example, my colleagues and I (Knoise, Anastopoulos, & Dunlosky, 2012) conducted a study in which we gave adults with and without ADHD an unstructured, open-ended learning task: learn 40 noun-noun word pairs (e.g., garden-sister) printed on one side of a set of cards for a later test in which the participant was given the first word and had to recall its mate. Participants were given no time limits nor any hints as to how they should study the words. On this task, a group of adults with ADHD ($n = 34$), who did not differ from a non-ADHD group ($n = 34$) in terms of estimated full scale IQ or

education, recalled significantly fewer words ($M = 22.48$, $SD = 13.06$ vs. $M = 29.96$, $SD = 10.89$; Cohen's $d = .62$). In practical terms, if this had been a graded quiz, the non-ADHD group would have earned, on average, a solid C compared to an F average in the group with ADHD.

These results beg the question of whether, as a group, adults with ADHD approached the task differently—in a way that could explain their differences in learning. In other words, what were they *doing* or *not doing* when asked to study the words? To answer this question, we measured a variety of possible strategy approaches the participants could have used as well as their self-reported effort and the time they chose to spend on the task. We found that participants' *self-testing behavior*—or, the extent to which they quizzed themselves on the items while studying—best differentiated the behavior of the groups. Fifty-one percent of people in the ADHD group were observed to self-test even once compared to 82% of the non-ADHD group. Although we were not able to directly test whether self-testing produced the between-group differences in memory test performance, failure to self-test was associated with poorer memory performance across groups (Cohen's $d = 1.11$). And although our study did not specifically test college students, our results dovetail with an investigation of the self-reported study strategies of college students with ADHD in which they reported less frequently using effortful but effective strategies including self-testing (Reaser, Prevatt, Petscher, & Proctor, 2007).

If college students with ADHD are under-utilizing self-testing, this presents a potentially powerful target for intervention. *Retrieval practice*—or taking tests on to-be-learned material, that is, self-testing—is among the most powerful learning strategies and produces some of the most robust memory effects in the cognitive psychology literature (Roediger & Butler, 2011). Many students use it as an assessment strategy to figure out what information they have and have not yet retained. But retriev-

ing items from memory also has a direct impact on the likelihood of remembering those items. In a recent monograph, Dunlosky, Rawson, Marsh, Nathan, and Willingham (2013) reviewed the empirical evidence for ten commonly used learning strategies and found the most support for the effectiveness of practice testing and distributed practice (studying in sessions spaced across time). Yet college students—including those without ADHD—under-utilize practice testing, preferring less effective and less effortful strategies like highlighting or re-reading (Karpicke, Butler, & Roediger, 2009). If college students with ADHD are even less likely to use self-testing than their non-ADHD peers, as seems likely from past studies, training in this straightforward yet effective strategy might have the potential to make a large therapeutic impact.

But despite the robustness of the testing effect, shockingly little research has examined the magnitude of the effect in clinical populations, and no prior study has examined the magnitude of the testing effect in ADHD. In other words, we know that the strategy works for people without ADHD, but we do not have direct evidence that it works for people with ADHD. Thus, in order to know whether this skill should be used as part of an intervention, we need to know whether it is actually effective for students with ADHD when they do use it. This was the motivation for a study we recently completed on the testing effect in college students with ADHD.

My colleagues and I (Knouse, Rawson, Vaughn, & Dunlosky, 2015) investigated whether college students with ADHD show the testing effect—that is, do they show significant gains in long-term recall when given the opportunity to practice retrieval above and beyond their performance when simply restudying items? We also compared whether any memory benefits of testing were comparable in magnitude for students with and without ADHD. To test our hypotheses, we recruited 25 college students diagnosed with ADHD who met several inclusion criteria and compared them to 75 students with no histo-

ry of ADHD but matched to the ADHD group on their basic recall performance. Participants completed a computerized memory task in which they studied two separate lists of 40 words each.* For List A, they simply saw the list in a randomized order 8 times, restudying each time (study trials). For List B, participants had a study trial followed by the chance to recall and type in as many words as they could (test trial): this process was repeated four times, resulting in four study trials and four test trials for List B, compared to the eight study-only trials for List A. Participants then returned to the lab two days later and were asked to recall as many words as possible from each list. The advantage in number of words recalled for the study-test list vs. the study-only list represents the testing effect.

We found evidence for a moderate testing effect in *both* students with and without ADHD. Specifically, both groups remembered more words from the list that they had taken tests on while studying compared to the list that they had only studied (main effect of encoding condition, $F(1, 98) = 21.42$, $p < .001$, $\eta_p^2 = .179$). Further, the magnitude of this effect was comparable for both groups as evidenced by no interaction of condition by group and a similar effect of test-only vs. study-test in each group (ADHD: $d = .57$; non-ADHD: $d = .50$). The take-home message is that, admittedly under ideal conditions, students with ADHD showed just as much memory advantage when using self-testing during studying as did students without ADHD.

In sum, our study showed that retrieval practice has the potential to help college students with ADHD study more efficiently and effectively. Additional studies are needed to extend the findings to more representative learning situations and materials. In addition, knowing that the strategy can work for students with ADHD is only a first step because getting clients to *actually use* effective strategies is often the bigger hurdle. We plan to conduct additional studies investigating how best to

*Words in the lists could also be grouped into categories, which enabled us to test one hypothesis about the mechanisms of the testing effect that is less germane to the current discussion. For more information, see Knouse et al., 2015.

cue and support the use of this strategy for students in real world contexts.

In the meantime, however, there is ample evidence for the efficacy of practice testing as a general study strategy to support recommending it to college students with ADHD wishing to improve the efficiency of their studying. In this regard, clinicians in college counseling centers could look for opportunities to partner with staff at academic skills centers on campus because that staff often has specific expertise in learning and study strategies. Clinicians can also work with their clients to identify useful online or smartphone apps that support self-testing while studying (e.g., Quizlet.com, Chegg flashcards). Paper flashcards are another tried-and-true tool. I advise my students to try to think like a professor and create questions they think I would put on an exam to use when studying. Students can also collaborate to share flashcards, create practice tests for one another, and quiz each other during group study sessions. As with any new skill, the most powerful teacher will be the student's own experience of success after putting in the effort to use the method. In that regard, clinicians could even use an in-session demonstration of the testing effect to help increase client motivation to use the strategy.

CONCLUSION

In sum, CBT for adults with ADHD is undergoing an exciting evolution as a result of clinical researchers' efforts to adapt the interventions for college students. They have thoughtfully considered the setting and the specific needs of this group of adults with ADHD when tailoring their interventions. Likewise, each clinician working with college students must tailor CBT to each client and consider his or her specialized needs as a professional learner. Hopefully, the recommendations offered here will prove useful in this endeavor.

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