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Feasibility of an Acceptance and Commitment Therapy adjunctive web-based program for
counseling centers

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Abstract

Web-based adjunctive tools provide a promising method for addressing the challenges college counseling centers face in meeting the mental health needs of students. The current study tested an initial adjunctive prototype based on Acceptance and Commitment Therapy (ACT) in a pre-post open trial with 30 counselors and 82 student clients across 4 counseling centers. Results indicated high ratings of program satisfaction and usability with counselors and students. The majority of students completed at least part of the program. Significant improvements were found across almost all outcome and ACT process measures with student clients. Improvements in student outcomes were predicted by both changes in psychological inflexibility and how often counselors discussed the program with students. Results are discussed in relation to support for and future development of a flexible, adjunctive ACT program for counseling centers.

Keywords: Acceptance and Commitment Therapy; Mindfulness; College students; Web-based

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College counseling centers (CCC) face significant challenges in meeting the mental health needs of their student clients (AUCCD, 2012; Gallagher, 2012; 2013). Surveys of CCC directors indicate increases in both demand for services and the severity of presenting problems among students seeking treatment (Gallagher, 2012). Furthering these challenges, resources are limited at CCCs with centers averaging approximately 1 counselor to every 1,600 students (AUCCD, 2012) and budgetary issues are a frequent concern for directors (Gallagher, 2013). Cost effective solutions are needed that can improve the efficiency and efficacy of counselors treating the range of college student mental health problems.

Web-based interventions are a promising method for improving CCC services, particularly when implemented as an adjunctive guided self-help tool. A large body of research has demonstrated that web-based interventions can be efficacious in treating a range of psychological problems, especially when a mental health professional provides some guidance/support in using the self-help program (e.g., Andersson & Cuijpers, 2009). An adjunctive guided self-help intervention could improve the efficacy of CCC treatment, while improving capacity to meet demands for services by reducing counselor time per client. Such a program could provide a flexible tool for counselors to use with their clients for spacing out and reducing the number of face-to-face sessions, homework between sessions, treatment during breaks, a supplement to group therapy, to support relapse prevention after termination, for those on the waitlist, and so on. This could also improve the implementation of evidence-based therapy within CCCs, overcoming issues such as maintaining adherence and limited resources for training (Cooper, 2005; Owen, Tao, & Rodolfa, 2005) by providing core evidence-based therapy content through

the adjunctive self-help program, with counselors in a more guiding role. Although therapists would be spending some time monitoring and guiding clients, the increase in treatment dosage would be much greater, producing an overall increase in efficiency and possibly efficacy.

Despite the potential benefits of an adjunctive web-based approach, a recent survey of CCC directors found that only 0.3% offer online counseling services (AUCCD, 2012). This may be due in part to the fact that few available web-based programs are truly focused on the *treatment* needs of *college students*, tending to instead focus on broader prevention efforts (Farrer et al., 2013). Furthermore, perhaps for legal and ethical reasons, CCCs tend not to rely on pure self-help and very few programs have been developed that provide adequate support to counselors for conducting adjunctive guided self-help. Another critical issue is that most web-based programs are relatively disorder specific, but CCCs typically treat a broad range of problems, including problems with relationships, academics and adjusting to college. To fit the CCC context, a web-based intervention would need to be flexible and able to treat a wide range of problems.

Acceptance and Commitment Therapy (ACT; Hayes, Strosahl & Wilson, 2012) is a promising approach for CCCs as it can be used to effectively treat many of the problems student clients are likely to present with (Pistorello, Hayes & Levin, 2012). ACT is a contextual cognitive behavioral therapy that uses a combination of acceptance, mindfulness, values and commitment treatment components to reduce a common core pathological process called psychological inflexibility, a pattern in which actions are rigidly governed by psychological reactions (i.e., thoughts, feelings, urges), or to avoid such experiences, rather than direct contingencies or chosen values. There are over 100 published randomized controlled trials (ACBS, 2014) indicating that ACT is effective in treating a broad range of issues including depression, anxiety, substance abuse, eating disorders, stress, smoking, academic concerns,

stigma and self-harm (Ruiz, 2010). Furthermore, mediational analysis consistently demonstrate the impact of ACT on these clinical problems is accounted for by reductions in psychological inflexibility (Ruiz, 2010), providing further support that ACT impacts various problems by targeting psychological inflexibility as a common core process.

The current study describes the results from an initial feasibility trial testing a prototype adjunctive web-based ACT program designed to help address the challenges being faced at CCCs. The prototype included 3 (of an eventual 6) self-help lessons targeting values, acceptance and mindfulness as well as preliminary training material and student monitoring features to support counselors in providing guided self-help. The feasibility trial involved counselors and student clients across multiple centers that provided self-report data on program usability and satisfaction. In addition, preliminary outcome and process measures were collected with student clients to examine the initial efficacy of the program. Although such feasibility studies, particularly in an open trial design, have notable methodological limitations, they are an important step in determining whether further program development is warranted and any revisions to the approach that are needed. As such, if the program is found to be feasible and acceptable, it would guide the development of a comprehensive adjunctive guided self-help website that ultimately may improve the efficiency and efficacy of treatment provided at CCCs.

Methods

Participants

Counselors. The study included 30 counselors from 4 CCCs across the nation: two large public institutions and two small private institutions (between 3 and 14 counselors per site participated). Counselor inclusion criteria only consisted of currently working at a CCC and

being willing to use the program for the 10 week study period. A total of 59 CCC counselors were invited to participate, with 51% choosing to do so.

The counselor sample was 66.7% female with a median age of 37 ($M = 40.00$, $SD = 11.75$, Range = 25 - 63). The racial distribution of the sample was 85.7% White or Caucasian, 7.1% Asian, 3.6% American Indian/Alaska Native, and 3.6% multiracial; 3.3% identified as Hispanic or Latino ethnicity. In terms of representativeness on demographics, the study sample was comparable to national data on CCC staff (Gallagher, 2013) for gender rates (67% vs. 69% nationally), but was somewhat higher on rates of White/Caucasian counselors (86% vs. 78% nationally). This translated into lower rates of ethnic minority participants, most notably a lack of African American counselors. The educational background of counselors was 6.7% Bachelor's degree, 73.3% Master's degree, 16.2% Ph.D. and 3.3% PsyD. The position of counselors at the CCC was 63.3% professional staff member, 13.3% practicum student, 20.0% counseling or clinical psychology intern and 3.3% other. The mean number of years at the counseling center was 5.73 ($SD = 7.51$, Range = 1 - 28).

Student Clients. The student sample consisted of 82 student clients receiving treatment from participating CCC counselors. Eligibility criteria included (a) currently being treated at a CCC, (b) invited to use the program by a participating counselor, and (c) over 18 years of age. In addition, students with current psychotic disorders, risk of harm to self or others, or needing close medical and/or psychiatric oversight were excluded based on counselor assessment (i.e., counselors were instructed to only invite students who were clinically stable). A total of 177 student client invitations were created by counselors in the ACT-CL program, with an estimate of 46% of these clients choosing to participate. However, this is a conservative estimate as

counselors reported that many links were created but not used (i.e., forgetting to give to students, creating extras for quick access, giving students another link when they lost the first one).

The student sample was 75.6% female with a median age of 21 ($M = 21.88$, $SD = 3.50$). The racial distribution of participants was 71.2% White or Caucasian, 11.3% Asian, 10.0% Black or African American, 1.3% American Indian/Alaskan Native, and 6.2% multiracial; 5.0% identified as Hispanic or Latino ethnicity. There was variety regarding year in school; 12.2% Freshman, 13.4% Sophomore, 25.6% Junior, 24.4% Senior, 23.2% Graduate/professional degree student, and 1.2% non-degree student. Compared to national data on students seeking treatment (CCMH, 2014), the study sample had higher rates of females (76% vs. 63%), higher rates of graduate students (23% vs. 14%) and lower rates of Freshmen and Sophomore students (25% vs. 39%). There were similar rates of students across most racial/ethnic categories (i.e., 71% White/Caucasian in national data and the study sample), with the most notable difference being a higher rate of Asian American participants in the study sample (11% vs. 6%).

Counselors were asked to indicate each student's presenting problems. However, data was only provided for 37% of the clients, possibly due to placement of this diagnostic question within the system and the lack of reminders to enter this information. The results nonetheless suggest a variety of presenting issues relevant to a transdiagnostic approach: 53.3% had relationship issues, 40.0% depression, 26.6% GAD, 26.7% family of origin issues, 26.7% academic issues, 20.0% social phobia, 20.0% adjustment disorder, 10.0% test anxiety, 6.7% bereavement, 6.7% anger, 6.7% OCD, 6.7% PTSD, 6.7% alcohol use disorder, 3.3% drug use disorder, 3.3% bipolar, 3.3% trauma history and 3.3% non-suicidal self-injury (note that 93.3% had two or more presenting problems).

Procedure

Counselors were recruited through an email invitation forwarded by their CCC directors and presentations at staff meetings. Interested counselors received a website link to complete informed consent online followed by completing an online baseline survey of demographics and ACT program knowledge. Counselors then had 10 weeks to use the program. They were first required to complete the web-based training portion and pass a certification test (80% correct or greater), after which they could use the program with participating student clients whom they invited. After 10 weeks, counselors completed a post survey of program satisfaction and ACT program knowledge as well as a phone interview to gather additional qualitative data.

Eligible student clients were provided a flyer inviting them to participate in the study by their counselor. Counselors were provided details regarding eligibility criteria and instructed to provide flyers only to students who were eligible (e.g., clinically stable). Interested students followed the link on the flyer to complete informed consent through the web-based program followed by completing an online baseline survey. The baseline survey included assessment of psychological symptoms, quality of life and ACT processes of change. Students had 4 weeks to use the guided self-help program, after which they completed a web-based post survey that included the same measures as baseline as well as items assessing program satisfaction.

Ethical approval for the study was provided by Oregon Research Institute's Internal Review Board (IRB) as well as the IRB for each CCC site when available (one site did not have an IRB). All study procedures complied with APA ethical standards. Completion of the program and assessments were not incentivized (i.e., no monetary compensation) to increase the external validity of the study and assess degree of program participation excluding such incentives.

ACT on College Life (ACT-CL). The ACT-CL prototype included separate counselor and student portals. For the student portal, three, 30-45 minute self-help lessons were provided in the

prototype focused on values, acceptance and mindfulness. To ensure program content was consistent with an ACT approach content development was overseen by the second author, a noted expert in ACT for college student mental health, and the third author, a primary developer of ACT. Lessons were designed to be highly engaging for students through a heavy multimedia and interactive approach. Interactive elements were integrated throughout lessons including worksheets, interactive metaphors and experiential exercises. For example, a leaves on a stream exercise in the mindfulness lesson involved writing down thoughts as users became aware of them, which would then be visually displayed on a leaf floating down the stream to practice stepping back and noticing thoughts as just thoughts. Self-help lessons were presented in a tunneled format in which users had to complete the lessons in a specific sequence. Automated program emails were sent to students to remind them to complete lessons as well as additional skills they could practice to work on the skills they learned in the program.

For the counselor portal, four training modules were created for the prototype, a program introduction module and a module for each of the self-help lessons. Each training module included instructional videos describing the key features of ACT and the ACT-CL program as well as how it might be used in CCC practice. Training modules also involved counselors going through self-help lessons themselves, providing an opportunity to review program content as well as experientially engage in learning core ACT principles. A certification test was provided after completing all training modules (counselors had to score 80% correct on the test to begin using the program with clients). Training took about 4 hours for counselors to complete.

After completing the training, counselors received access to the website's monitoring system to assist with providing guided self-help. In the monitoring system, counselors could invite students to use the program (by creating unique links to register) and monitor program usage of

participating students. The latter included an overview of students' progress in the self-help lessons as well as specific responses to exercises (i.e., what goal the student set for this week).

The functionality, content and look and feel of the ACT-CL prototype was targeted to CCC counselors and their clients through a combination of focus groups, focused interviews, and usability testing, which informed iterative program development. The prototype was developed as a "proof of concept" to determine the feasibility of the ACT-CL approach, which if found beneficial, would be further expanded to include an additional 3-5 self-help sessions targeting the other components of ACT and additional features to support guided self-help (i.e., expanded counselor training, internal messaging system, tailoring based on student problem, mobile app).

Measures Provided to Student Clients Only

Depression, Anxiety and Stress Scale (DASS; Lovibond & Lovibond, 1995). The 21-item DASS was used as a primary outcome measure for students with three distinct subscales assessing depression, anxiety and stress symptoms. DASS items are rated on a 4-point scale ranging from 0 "did not apply to me at all" to 3 "applied to me very much, or most of the time." Past research has indicated the validity and reliability of the DASS (Antony et al., 1998; Lovibond & Lovibond, 1995) and the DASS has been found to be sensitive to self-help and web-based ACT interventions with college students (e.g., Levin, Pistorello, Seeley, & Hayes, 2014). There was adequate internal consistency for the DASS in the current sample, with Cronbach's alpha scores of .91, .80 and .82 for the depression, anxiety and stress subscales respectively.

Satisfaction with Life Scale (SWLS; Diener et al., 1985). The SWLS is a 5-item measure of quality of life, conceptualized as life satisfaction, and was included as a secondary outcome measure for students. Items are rated on a 7-point scale from 1 "Strongly disagree" to 7

“Strongly agree.” The SWLS has been found to have adequate reliability and validity in past research (Diener et al., 1985). The Cronbach’s alpha for the SWLS in the current study was .89.

Acceptance and Action Questionnaire – II (AAQ-II; Bond et al., 2011). The 7-item AAQ-II was used to measure psychological inflexibility. Items are rated on a 7-point scale ranging from 1 (“never true”) to 7 (“always true”). Research has indicated adequate reliability and validity with the measure in samples including college students (Bond et al., 2011) and the AAQ has consistently been found to be a mediator of ACT interventions (Ruiz, 2010). The Cronbach’s alpha for the AAQ-II in the current study was .82.

Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006). Three FFMQ subscales were included to assess specific facets of mindfulness: observing (awareness of present moment experiences), acting with awareness (being unaware as engage in activities), and being nonjudgmental (judging one’s thoughts and emotions). Research indicates that these facets have adequate reliability and validity (Baer et al., 2006). The Cronbach’s alpha in the current study were .84, .89 and .94 for observing, acting with awareness and nonjudgmental respectively.

Personal Values Questionnaire-Education Subscale (PVQ; Ciarrochi et al., 2006). Six items from the PVQ were used to assess student clients’ education values orientation and their success living out their stated values within the domain of education. Values orientation was calculated as the ratio of appetitive reasons for values in education (e.g., “I value this because doing these things makes my life better, more meaningful, and/or more vital.”) relative to aversive reasons for values (e.g., “I value this because I would feel ashamed, guilty or anxious if I didn’t”). An additional item assessed the degree to which participants were successful in acting consistently with their education values over the past 4 weeks on a 5-point scale ranging from 1

(“0-20% successful”) to 5 (“81-100% successful”). Past research has found the PVQ education subscale to be sensitive to ACT interventions with college students (Levin et al., 2014).

Measures Provided to Counselors and Student Clients

ACT-CL Knowledge. A questionnaire was developed based on similar previous questionnaires (Levin et al., 2014) to assess knowledge of ACT content covered in the ACT-CL program. A 15-item measure for student clients assessed knowledge about psychological flexibility processes drawn from the 3 self-help lessons, while a 20-item measure was used for counselors that included an additional 5-items covering content discussed in the training related to ACT and guided self-help. A similar ACT-CL knowledge questionnaire was found to be sensitive to intervention effects in a previous web-based ACT trial with college students (Levin et al., 2014).

System Usability Scale (SUS; Tullis & Albert, 2008). The 10-item SUS assessed program usability ratings for ACT-CL. The SUS consists of a series of items, which rate features of program usability on a 5-point scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). The SUS is a widely used measure and research has indicated strong support for the reliability and validity of the SUS in evaluating program usability (Bangor et al., 2008). The Cronbach’s alpha for the SUS in the current study was .81 for students and .81 for counselors. Additional satisfaction items were developed to assess features including perceived helpfulness of the program, willingness to recommend the program to others and satisfaction with the program. Each item was rated using a forced choice 6-point scale from 1 (“Strongly Disagree”) to 6 (“Strongly Agree”), with 4 (“slightly agree”) or higher indicating a positive response.

Data Analysis Plan

Analyses examined program usage, satisfaction and pre to post changes in outcome/process measures. Descriptive statistics were calculated to examine program usage data and program satisfaction ratings from counselors and students. Paired *t*-tests examined pre to post changes in outcome and process measures among student clients as well as pre to post changes in ACT-CL program knowledge among counselors.

Psychological inflexibility is a primary target of ACT and studies have consistently found that changes on the AAQ mediate outcomes (Ruiz, 2010). Processes of change were explored through a series of partial correlations testing the relationship of pre to post change scores on psychological inflexibility (AAQ-II) to each post outcome measure, controlling for respective baseline scores. Analyses also examined the relationship of counselor behavior to pre to post improvements among students. At post, students indicated the degree to which their counselor discussed the program with them using a 4-point scale ranging from 1 “not at all” to 4 “very much.” Analysis of Covariance compared students who reported “not at all” or only “a little” discussion of the program with their counselor versus students reporting “quite a bit” or “very much” discussion on post outcome/process measures, controlling for respective baseline scores.

RESULTS

Missing Data

At post, 67% of counselors ($n = 20$) and 44% of student clients ($n = 36$) completed the survey; an additional 5 students completed part of the post survey. Students who completed all 3 lessons were significantly more likely to complete the post survey, $\chi^2 (1, N = 82) = 32.42, p < .001$, and the vast majority (90%) of participants who completed all 3 self-help lessons completing the post survey. In addition, only 22% of students who did not complete any of the self-help lessons completed the post survey. A similar pattern was found with the counselor post

data such that all 6 counselors who did not complete the training were also the only 6 participants who did not complete the post survey ($\chi^2 (1, N = 30) = 15.00, p < .001$).

To create an intent to treat sample, missing post self-report data were imputed using multiple imputation. A total of 40 imputations were created due to the percent of missing data (Graham et al., 2007). Given the pattern seen with missing data, the number of self-help sessions completed for the student client dataset and whether the training was completed for the counselor dataset were included as auxiliary variables in the imputation model to reduce the potential for bias.

Program Usage

Counselor Program Usage. Counselors logged on to the website an average of 18.40 times ($SD = 11.15$, Median = 17.50, Range = 0 – 38; one counselor never logged in), suggesting almost all were actively engaged in using the program. Twenty four (80%) counselors completed the training and only one counselor did not complete any of the training, indicating adequate usability for the training portion. Counselors obtained a high degree of correct responses on certification tests ($M = 92\%$ correct, $SD = 7\%$).

Counselors were engaged in using the program with their clients. Among those who passed the training, counselors used the program with an average of 3.42 clients ($SD = 2.34$, range = 0 – 9); note that counselors were encouraged to use the program with 3 of their clients. Counselors viewed in the monitoring system an average of 55% of the self-help lessons completed by students ($SD = 32\%$, 10% did not view any available lessons, 15% viewed all lessons) and spent an average of 10.20 minutes total (across all clients and weeks using the program) reviewing student data in the monitoring system ($SD = 9.98$ minutes, range = 0 = 37.30).

Student Program Usage. Program usage rates indicated that 67% of students completed the first lesson, 49% completed the first and second lessons and 38% completed all three lessons

(which is similar to other studies that did not include a high degree of control or additional incentives for program engagement; e.g., Calear et al., 2013). Students spent an average of 61.70 minutes using the program ($SD = 50.58$) and logged into the program an average of 3.90 times ($SD = 3.35$, Median = 3.00, range = 0 – 12, 9.8% never logged in). Students reported seeing their counselor an average of 1.83 times during the intervention period; 78% reported discussing their experiences with ACT-CL with their counselors at least “a little” or greater.

Program Satisfaction

Counselor Program Satisfaction and ACT Knowledge. The mean usability rating from counselors on the SUS was 83.53 ($SD = 10.67$), which is in the “good” to “excellent” range based on prior benchmarking studies (Bangor et al., 2008), indicating the program was viewed as useable, satisfying, and useful. On the additional 6-point satisfaction items (range = 1 – 6), the majority of counselors indicated being satisfied with the training ($M = 4.93$, $SD = 1.01$, 89% rating ≥ 4 “slightly agree”), satisfied using the program with clients ($M = 4.73$, $SD = 1.05$, 82% ≥ 4), that they would like to use the program in the future ($M = 4.87$, $SD = 1.17$, 93% ≥ 4), that the program helped them with their job ($M = 4.26$, $SD = 1.19$, 79% ≥ 4), that the program would be helpful to student clients ($M = 4.73$, $SD = 1.20$, 90% ≥ 4), that they would recommend the program to their student clients ($M = 4.93$, $SD = 1.11$, 94% ≥ 4) and that they would recommend the program to other counselors ($M = 4.97$, $SD = 1.10$, 95% ≥ 4).

Counselors also indicated that the program improved their understanding, intentions and confidence in using ACT; the majority of counselors agreed that they learned something new about ACT ($M = 4.53$, $SD = 1.50$, 82% ≥ 4), would like to use ACT in the future ($M = 4.93$, $SD = 1.23$, 90% ≥ 4), and are confident in their ability to use ACT skills outside of the guided self-help program ($M = 4.50$, $SD = 1.07$, 80% ≥ 4). A paired t -test indicated a significant improvement in

counselor ACT-CL knowledge from pre to post, $t(29) = 3.67, p < .001$, Cohen's $d = .88$ (Pre knowledge percent correct $M = 79.2\%$, $SD = 13.3\%$, Post knowledge $M = 90.4\%$, $SD = 8.7\%$).

Student Program Satisfaction. The program had high usability ratings on the SUS ($M = 85.14, SD = 9.78$), which is in the “excellent” range (Bangor et al., 2008). Additional satisfaction items using the same 6-point scale indicated that the majority of students were satisfied with the program ($M = 4.82, SD = 1.41, 73\%$ rating ≥ 4 “slightly agree”), thought the program is helpful for students in counseling ($M = 4.64, SD = 1.18, 90\% \geq 4$), and would recommend the program to other students in counseling ($M = 4.65, SD = 1.17, 92\% \geq 4$).

Pre to Post Changes in Outcomes and Processes among Students

Paired t -tests indicated significant improvements on almost all of the outcome and process measures from pre to post among student clients (see Table 2). Significant within condition effect sizes ranged from .38 to .71. The only non-significant effects were for satisfaction with life ($p = .15$), education values success ($p = .29$) and mindful observing ($p = .09$).

Predictors of Improvements in Student Outcomes

Reductions in Psychological Inflexibility. Partial correlations examined the relationship of pre to post changes in psychological inflexibility to students' post outcome scores, controlling for their respective baseline scores. Improvements in psychological inflexibility were significantly related to improvements on student outcomes including depression ($r(79) = .39, p < .001$), anxiety ($r(79) = .29, p < .001$), and stress ($r(79) = .30, p < .001$). However, improvements in psychological inflexibility was not significantly related to improvements in satisfaction with life ($r(79) = .18, p = .11$) or education values success ($r(79) = .21, p = .06$).

Counselor guidance. ANCOVAs compared post outcomes for students who reported “not at all” or only “a little” discussion of the program with their counselor ($n = 47$ in the pooled

multiple imputation results) versus students reporting “quite a bit” or “very much” discussion ($n = 35$ in the pooled multiple imputation results). Students whose counselors discussed the program with them frequently improved more at post on psychological inflexibility ($F(1, 81) = 14.29, p < .001, \text{partial } \eta^2 = .13$), being nonjudgmental ($F(1, 81) = 10.32, p = .002, \text{partial } \eta^2 = .11$), mindful observing ($F(1, 81) = 4.40, p = .04, \text{partial } \eta^2 = .05$), depression ($F(1, 81) = 13.95, p < .001, \text{partial } \eta^2 = .13$), anxiety ($F(1, 81) = 29.64, p < .001, \text{partial } \eta^2 = .22$), and stress ($F(1, 81) = 14.89, p < .001, \text{partial } \eta^2 = .13$). However, there were no between group differences on mindful acting with awareness ($p = .37$), values orientation ($p = .18$), values success ($p = .08$), or satisfaction with life ($p = .053$). Counselors who performed better on the certification test subsequently used the program with significantly more student clients, $r(24) = .41, p = .045$.

DISCUSSION

The results from the current study provide preliminary support for the feasibility and acceptability of an adjunctive web-based guided self-help program for college counselors to use with their student clients in treating a range of presenting problems. Program satisfaction and usability ratings were high for both counselors and students. The majority of counselors completed the training and successfully used the program with their clients. Although not all students completed the self-help lessons, the majority completed at least part of the program. Students reported significant improvements across almost all measured outcome and targeted process of change variables, though these improvements should be interpreted with caution given the pre-post open trial design (i.e., effects may be due to their participation in counseling or other uncontrolled confounds). Results were supportive of an adjunctive guided approach with improvements in outcome and processes related to whether counselors frequently discussed the program with students. Although these findings are preliminary, they are critical for informing

the much more costly/intensive development of the full ACT-CL program as well as hopefully inspiring further work in this growing area of adjunctive CCC technologies.

Only one third of students completed the ACT-CL program, but these rates do not differ substantially from those found in other intervention studies in which experimenters did not impose a high degree of control or additional incentives for program engagement (e.g., Calear et al., 2013), although they are somewhat lower than programs using a guided approach (Christensen et al., 2009). Since the ACT-CL program was adjunctive to ongoing face-to-face counseling, it is reasonable to expect that not all clients would want to engage in additional treatment through this medium, suggesting that some clients simply did not prefer this additional adjunctive modality. However, over a third of CCC clients did intensively engage in ACT-CL and found it helpful, suggesting the potential benefits of including this additional service option.

The low rate of students reporting that their counselor frequently discussed the program with them suggests many counselors did not provide adequate guided self-help and did not integrate this adjunctive service into the overall treatment, which may account for the somewhat lower completion rates. Some counselors reported feeling uncomfortable prompting their students to use the program in the context of a research study (i.e., having concerns over coercing research participation); others reported needing further training in how to conduct guided self-help. Thus, student engagement rates might be increased in the future by addressing these concerns such as through additional training on how to engage students and encourage continued use of the program.

Almost all counselors completed the training and generally performed well on the certification test. In addition, counselors reported learning about ACT and being interested in incorporating ACT into their practice, which suggests ACT-CL might also provide an innovative

method for counselors to be introduced to evidence-based treatments. A recent survey of CCC counselors indicated that one third felt they needed more training, but lacked time and resources to do so (Gallagher, 2013). Learning ACT through an adjunctive guided self-help training may be particularly useful as key ACT concepts and skills are introduced through the program, reducing the initial burden on counselors in mastering all of the therapeutic techniques while being exposed to modeling of effective ACT interventions.

A central question for future studies is whether ACT-CL improves the efficiency of treatment (e.g., reducing number of face-to-face sessions and counselor hours per client). The study did find that regular monitoring of clients took minimal time (less than one minute per client each week), although this does not account for the additional time in getting trained on the program and prompting students to continue using the program. Counselors did also rate the program highly with regards to helping with their job. Qualitative data from counselors suggested many thought the program could save resources while being able to serve more students and move students through therapy more quickly (particularly by the improved impact of therapy sessions and speed of progress in treatment when combined with the adjunctive program). However, more direct data is needed on efficiency, particularly given the additional counselor time in training and routine monitoring of clients. For example, a randomized trial testing the additive effect of ACT-CL could help determine to what degree improvements in outcomes are attributable to the extra time counselors and clients would spend using ACT-CL.

As this was a feasibility trial, there are notable limitations in the methodology. About half of the students did not complete the post survey, particularly those who did not complete the self-help program. These completion rates may be attributable in part to the lack of incentives for completing the surveys and the lack of contact information due to confidentiality requirements.

The lack of a control group limits the ability to interpret changes in measures over time among students, particularly because this was an adjunctive program used as part of ongoing therapy. Outcome and process measures may have improved primarily in response to ongoing counseling, in addition to a range of other confounds including regression to the mean, social desirability, measure reactivity or other variables not controlled for in an open trial. Thus, it is unclear to what degree student improvements can be attributable to using ACT-CL. Now that feasibility has been established for the ACT-CL prototype, follow up studies should test it in a randomized trial with adequate methodological controls. Additional support for this recommendation comes from that fact that improvements in psychological inflexibility, which was specifically targeted by ACT-CL, was related to outcome improvements, suggesting that change occurred in a theoretically consistent fashion.

Due to the costs of developing a highly interactive and multimedia-based intervention as well as the goals of initial feasibility research, the current study tested a limited ACT-CL prototype, which was missing several key ACT components and features to support guided self-help. The use of a prototype limits the questions that can be answered within a treatment trial as it is not yet testing the full program. Although the ACT-CL prototype led to improvements among students completing the post survey it is unclear whether effect sizes will be similar or larger with the complete intervention, or even if students will be less engaged in a longer intervention involving 6 to 8 sessions instead of only 3. Similarly, counselors' ability to guide and support students' use of the program was hindered as the training was more limited and key features were not yet available (i.e., internal messaging system, mobile app features, video role plays of conducting guided self-help) and it is unclear whether students would have been more engaged with additional counselor training and supportive technologies.

Due to the low rate of counselors providing data on their students' presenting problem (37%), analyses could not be conducted on different diagnostic groups. However, the pattern of available results did indicate a diverse range of diagnoses and presenting problems, which in combination with the positive feasibility results, suggests the program is at least acceptable to a heterogeneous sample of students seeking treatment. Further, the key therapeutic processes that were successfully impacted are known to predict improvements in a range of problems (Ruiz, 2010). Other features of the study sample may also limit generalizability of these findings including the lack of African American counselors, high rates of both female and older student clients, and use of stable clients self-selected by counselors (though this last limitation is how the program would typically be used in CCCs). Finally, this study did not test the full flexibility of ACT-CL which would also include its standalone use with clients who are not currently receiving treatment such as for outreach efforts or for clients on the waiting list (both of which might be particularly impactful for improving reach and quality of care).

Overall, this study provides preliminary support for the feasibility of ACT-CL and thus the potential promise of developing a complete adjunctive program that could be used as a transdiagnostic approach in college counseling centers. Such a program would likely include 6 to 8 self-help lessons targeting the entire ACT model along with a more extensive training program for counselors and supportive technologies for guided self-help. The development of programs like this may ultimately be crucial in improving the efficiency, efficacy and reach of counseling centers in treating the students they serve.

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Table 1. Pre to post changes in outcome and process measures among student clients.

| Measure | Baseline | Post | Paired <i>t</i> -test | Cohen's <i>d</i> |
|-------------------------------|-----------------|-----------------|--------------------------|---------------------|
| Depression | 19.97 (11.44) | 10.74 (18.65) | 4.19*** | .60 |
| Anxiety | 13.95 (9.54) | 6.34 (17.26) | 3.62** | .55 |
| Stress | 21.95 (9.84) | 14.15 (25.91) | 2.71** | .40 |
| Satisfaction with Life | 19.05 (7.79) | 21.06 (13.84) | 1.46 | .18 |
| Psychological Inflexibility | 29.47 (7.22) | 22.68 (12.62) | 4.57*** | .66 |
| Mindful Observing | 25.61 (6.37) | 28.49 (14.66) | 1.72 | .25 |
| Mindful Acting with Awareness | 22.53 (6.12) | 25.12 (7.48) | 3.32** | .38 |
| Mindful Nonjudgmentalness | 21.12 (8.31) | 28.65 (12.47) | 4.96*** | .71 |
| Education Success | 3.14 (1.31) | 3.46 (2.64) | 1.06 | .15 |
| Education Values Orientation | .57 (.39) | .44 (.22) | 3.22** | .41 |
| ACT Knowledge | 58.20% (17.87%) | 77.07% (51.87%) | 3.19** | .49 |

* $p < .05$; ** $p < .01$; *** $p < .001$