

ORIGINAL RESEARCH

Wellbeing Wednesdays: a pilot trial of acceptance and commitment therapy embedded in a freshman seminar

Morgan E. Browning¹, Elizabeth E. Lloyd-Richardson¹, Akshay V. Trisal, Victoria G. Kelleher, Mary H. Kayyal and Anna E. Schierberl Scherr

Department of Psychology, University of Massachusetts Dartmouth, North Dartmouth, MA 02747, USA

Corresponding author: Morgan E. Browning; Email: mbrowning@umassd.edu

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Abstract

University students face vast mental health challenges, and both attitudinal and structural barriers to seeking care. Embedding interventions in college courses is one solution. Acceptance and commitment therapy (ACT) is an ideal candidate intervention given its emphasis on values, context, and skill building from a transdiagnostic perspective. This study embedded a brief ACT intervention in a required freshman seminar that was delivered by trained but unlicensed graduate students. In two class sessions of the freshman seminar taught by the same instructor, one session was randomly assigned to receive the course as usual, and one session received the ACT intervention. ACT content was delivered to all students in the intervention course on five consecutive weekly class periods. Students in both classes who chose to participate in the study completed assessments before and after the intervention and at follow-up. There were no significant changes with tests that were run, including non-parametric tests given the small sample sizes. Descriptively, the intervention group had slight improvements in wellbeing and mindfulness and decreases in distress, and the control group had worsened wellbeing, mindfulness and distress. A moderate portion of intervention group students enjoyed the intervention and indicated use of ACT skills, particularly mindfulness. Results suggest that this classroom-based intervention was feasible and acceptable, but further study should occur given small sample sizes. Future work should continue course-based ACT interventions, and should also explore potential applications of student training to deliver interventions given the shortage of mental health providers on college campuses.

Key learning aims

- (1) Can acceptance and commitment therapy content and skills be integrated into an existing freshman seminar curriculum?
- (2) Can acceptance and commitment therapy improve wellbeing and decrease distress amongst college students?
- (3) How will students engage with and practise acceptance and commitment therapy skills outside of the context of session delivery?

Keywords: Acceptance and commitment therapy; course-based interventions; mindfulness; quality of life; university students; wellbeing

Introduction

Mental health challenges among college students have grown over the past decade, with the COVID-19 pandemic only making matters worse with respect to growing rates of depression, anxiety, suicidality, and other mental health challenges (Cuijpers, 2021; Duffy *et al.*, 2019). Mental

health difficulties are also strongly associated with poor academic performance and attrition (Mandrachia and Pendleton, 2015). The extent of mental health challenges in college students supports the need for increased focus on prevention and treatment strategies. Even small effect sizes, when considering the population-wide burden of college student mental health issues, may make a meaningful difference (Cuijpers, 2021).

Recent calls for thoughtful and nuanced interventions have come about in the context of worsening mental health. According to the World Health Organization's 2022 report on mental health, and their recent social development goals, investing in promotion, prevention, and treatment of mental health can improve public health in a cost-effective way by addressing risks and building systems of resilience and support (World Health Organization, 2022; World Health Organization, n.d.). Similarly, the White House recently issued multiple mental health research priorities. One such priority is strengthening implementation of a variety of interventions that are sensitive to specific university contexts, are culturally informed, and focus on resilience and protective factors (White House, 2023).

Students also face multiple barriers to mental health care access related to mental health stigma, attitudes towards mental health care, consequences, and financial, cultural and time barriers (Conley *et al.*, 2013b; Ebert *et al.*, 2019; Kazdin, 2019; Vidourek *et al.*, 2014; Worsley *et al.*, 2022). Interventions that target novel settings for intervention dissemination, and offer access to those that might not be willing or able to present for traditional psychological services, are useful strategies for focusing on improving overall wellbeing and life functioning (Cuijpers, 2021; Kazdin, 2022). As Worsley *et al.* (2022) summarize, universities need to move beyond reactive interventions, and to provide alternative and accessible resources to help students before their mental health deteriorates.

Course-based interventions

Setting-based interventions are one potential solution to move beyond reactive interventions, with accessible resources to support student mental health. Within a socio-ecological model, setting-based interventions assume healthy structures are necessary for healthy processes, and both are needed for healthy outcomes (Dooris *et al.*, 2014). Fernandez *et al.* (2016) reviewed settings-based interventions for university students, reporting that academic interventions that alter curriculum to provide mental health related skills and education are a promising way forward to support student mental health. However, they discuss how more research is needed to establish effectiveness of certain amounts of content, structure of the interventions such as in separate elective or required courses or infused in existing curriculum, and effectiveness of teaching strategies such as mindfulness for students in various degree programs outside of the health professions. Relatedly, in a comprehensive review of review-level evidence for university student mental health interventions, Worsley *et al.* (2022) emphasized the strong evidence base of support for CBT and mindfulness-based interventions. They also discussed that there is support for both settings-based interventions, and acceptance and commitment therapy (ACT) skills training, but limited review level evidence (Worsley *et al.*, 2022). As there was not a strong enough base of reviews to determine which interventions work best for which students and in what contexts, more research is needed examining settings-based interventions and ACT for university students. It follows that an ACT framework could be examined as a settings-based intervention as well, specifically as a framework for embedding mental health skills within coursework.

The educational setting is an ideal target for mental health promotion, because the years in university are an important developmental time for students, where they are open to ideas and desire solutions, and their entire social context is in one spot (DeArmond and Marsh, 1984). Interventions embedded in college courses are an ideal next step to potentially eliminate some of these barriers to care, given the relevance of mental health symptoms on school related outcomes,

the ecological validity of the school setting, and the potential for both a treatment and public health approach (Chugani *et al.*, 2020; Conley *et al.*, 2013a; Petersen *et al.*, 2022; Renshaw *et al.*, 2022).

Preventive, portable, and small-group based mental health treatment programs (such as those incorporated into courses) can meet a broad range of student mental health needs and levels of severity, and can be customized according to context, setting and population (Conley *et al.*, 2013b; Schiraldi *et al.*, 1998). These programs can involve group participation, skills practice, and values clarification and should be creatively embedded (DeArmond and Marsh, 1984). This is important so that students are able to receive the content of the interventions in a non-judgemental and non-stigmatized setting where they do not have to actively make a choice to receive treatment given many stigma related barriers for students to accessing mental health care (Zancan *et al.*, 2023).

Important considerations in course-based interventions include skills practice, participant's engagement levels, student year in school, and the training of facilitators given that there is support for lay providers as well as licensed providers (Abelson *et al.*, 2022; Arnold *et al.*, 2022; Conley *et al.*, 2013a; Conley *et al.*, 2013b; Kazdin, 2019; Schiraldi and Brown, 2001). For example, multiple studies have found positive effects of cognitive behavioural interventions embedded in courses that included skills practice and homework, compared with general stress management courses or general topic discussions (Brown and Schiraldi, 2004; Conley *et al.*, 2013b).

Acceptance and commitment therapy

ACT is a skill-focused intervention. It targets core processes of change within psychological flexibility, specifically (mindfulness, acceptance, flexible thinking, and awareness of personal values) in order to shift relationships with thoughts and feelings to be more flexible, and to help people take actions that align with their values (Hayes *et al.*, 2013a). It emphasizes teaching participants to take a non-judgemental stance towards thoughts and feelings and to use certain skills flexibly in response, and not to focus on changing distress specifically (Hayes *et al.*, 2006). For example, a student who in the past struggled with mathematics courses, but needs to pass one more to satisfy requirements for their major, may use mindfulness and defusion skills to provide some distance from stressful thoughts that they are not good at those subjects, and then would reflect on how their degree goals align with their values, and they would frame actions towards studying as aligning with those values.

ACT has been successful for many psychological difficulties (Gloster *et al.*, 2020; Regehr *et al.*, 2012). It is also a viable intervention that can be efficiently adapted and delivered across cultures and identities. ACT and its foundational science, contextual behavioural science, are ideal for expanding the reach and scope of interventions across cultures and contexts because of their focus on functional contextualism. More specifically, they target predicting and changing behaviour with precision, scope and depth, through better understanding the current function of behaviour, and how certain values can be a longer term and more sustainable reinforcer for behaviour change (White *et al.*, 2017). ACT can be thus adapted to local cultural knowledge and context given its focus on processes instead of topographical behaviours.

Furthermore, it focuses on values, which are of course still influenced by cultural context, but can be freely chosen by an individual (White *et al.*, 2017). In their discussion on their Model of Sustainable Mental Health, Bohlmeijer and Westerhoff (2020) refer to White *et al.*'s (2017) article, stating: 'The emphasis in ACT on clarification of personal values boosts its cross-cultural applicability'. For example, its focus on valued-living allows for specific cultural values to guide treatment such as spirituality or interdependence, making it potentially more acceptable than CBT in its focus on rationality and change for those of diverse backgrounds (Woidneck *et al.*, 2012). Cultural norms and values inform the behavioural processes that will be targeted in treatment, and the focus is on adapting those target processes instead of on current distress (Masuda *et al.*, 2021).

In their recent chapter, Masuda *et al.* (2021) reflect on the cultural adaptation of ACT, and how it relates to behavioural health concepts of cultural adaptation, competence and humility. They echo the same ideas that when ACT is truly practised functionally and contextually, this means it is being adapted to an individual within their own cultural context, and thus it is ideal for application across culture and identities. In practice, this is difficult to do, although given ACT's fundamental focus on processes rather than content, this moves progress in the right direction (Masuda *et al.*, 2021). Notably, they state the importance of further examination of the health and wellbeing of people with minoritized identities such as those related to ethnicity, gender and sexuality, and that this work can then inform knowledge gaps and service delivery (Masuda *et al.*, 2021). This makes it important to continue adapting ACT within future work with ACT that reports on demographics of samples and occurs in various contexts.

ACT embedded in the university curriculum

While ACT has a strong base of empirical support broadly, more work is needed exploring the use of ACT and other forms of cognitive behavioural therapies in brief, easily disseminated forms that afford access to a broader audience (Petersen *et al.*, 2022; Williams *et al.*, 2022).

ACT is especially well-suited for college students given its transdiagnostic nature, focus on developing agency over one's mental health, and potential for cost-effective delivery (Boone and Canicci, 2013; Downs and Eisenberg, 2012; Hayes *et al.*, 2013b; Renshaw *et al.*, 2022; Viskovich *et al.*, 2021).

ACT has been successfully delivered to university students embedded in workshops, seminars and online, and resulted in improved mental health, psychological flexibility, and attitudes towards school and mental health treatment (Barrasso-Catanzaro, 2015; Browning *et al.*, 2022; Danitz and Orsillo, 2014; Danitz *et al.*, 2016; Eustis *et al.*, 2017; Mullen *et al.*, 2021; Pistorello *et al.*, 2016; Viskovich and Pakenham, 2020). These studies varied in format including course-based interventions (Browning *et al.*, 2022; Danitz *et al.*, 2016; Mullen *et al.*, 2021; Pistorello *et al.*, 2016) and workshop formats (Danitz and Orsillo, 2014; Eustis *et al.*, 2017; Viskovich and Pakenham, 2020). They also vary in lengths of time, and support to engage in skills out of class, which is an important future direction that Pistorello *et al.* (2013) discuss, in that engagement in skills may wane over time.

As Danitz *et al.* (2016) reflect, attrition in studies, and all of the competing resources and priorities for college students, are both influential in designing ACT-based studies for college students. On the one hand, embedding ACT in a required course reaches students who may not have otherwise sought help, but on the other hand, there may be more motivation present in students self-selecting into an elective course or workshop (Pistorello *et al.*, 2013).

In terms of outcome measures, each study assesses some combination of mental health constructs and ACT processes, and outcomes related to the experience of participants such as receptivity or satisfaction. Similarly, Ong *et al.* (2023) describe measurement in ACT studies. They describe how it is important for ACT studies to assess psychological inflexibility and flexibility, given that they are related but distinct constructs that are both influential in progresses of change but do not exist on two ends of the same spectrum. Furthermore, inherent in targeting psychological flexibility and inflexibility is helping someone to build a meaningful life, therefore Ong *et al.* (2023) state that quality of life should be assessed in ACT studies as well. Finally, they agree that measuring psychological distress symptoms is against theoretical tenets of ACT. They also state that one part of building a meaningful life involves reducing suffering. This aligns with various public health and consumer priorities to understand if a treatment can reduce suffering. Therefore, measuring depression and anxiety symptoms still has a useful function within ACT studies.

Christodoulou *et al.* (2021) implemented a one-day ACT skills training for university students that reduced psychological distress and negative emotions with changes influenced by psychological flexibility and mindfulness. They recommend the importance of continuing

training, outreach, and skills-based interventions, which can provide students with a skillset that might be sufficient to prevent onset of psychopathology, and affords students access to mental health support outside of the therapy room when they might not have otherwise had access. They also recommend that interventions be embedded in traditional college activities to keep costs down, such as organizing one-day trainings, embedding them within societies, clubs or teams, or providing asynchronous online and electronic support. It is important that future research assess various delivery formats (Christodoulou *et al.*, 2021).

Pistorello *et al.* (2013) had discussed the importance of further examination of effectiveness of delivery of ACT in college courses by people who are not licensed mental health providers. This is an example of task-shifting which can help scale mental health care (Kazdin and Rabbit, 2013). As Christodoulou *et al.* (2021) also stated: 'Specific academic training in ACT is not a prerequisite to practice'. The point of the potential of lay providers was further confirmed when Arnold *et al.* (2022) found in their review that ACT can be delivered successfully by lay providers who are not licensed clinicians. Thus, this study will implement an intervention with trained graduate students who are unlicensed.

The current study aims

When testing psychosocial interventions, in order to achieve maximum public health impact, they should be tested in the contexts and settings they are developed for where possible, and studies should blend tests of effectiveness and implementation (Beidas *et al.*, 2023). This pilot intervention study aimed to test feasibility, acceptability and preliminary effectiveness of a brief ACT intervention. The intervention was delivered by trained but unlicensed graduate students under the supervision of a licensed psychologist during five consecutive weekly class meetings. The control condition was a second class session of the seminar taught by the same instructor on the same day. This class received their usual curriculum for this seminar which involves a standardized set of topics with some flexibility within each instructor. This course received health education content (e.g. sleep and healthy eating) from their professor on the days that the intervention group received ACT content.

Aim 1 was to examine the limited efficacy of the intervention according to Bowen *et al.*'s (2009) feasibility study definition. We examined pre to post changes in the intervention with non-parametric tests given the small sample size. We also report effect sizes in the context of prior research. Specific outcomes tested include psychological flexibility, quality of life, and psychological distress (combined stress, anxiety and depression). We expected the intervention group would increase in positive psychological flexibility and quality of life, and would decrease in psychological inflexibility and psychological distress. Given the natural course of a semester at university and potential increases in stress, we expected that potentially the control condition course as usual group may also increase in psychological distress.

For Aim 2, combining Bowen *et al.*'s (2009) feasibility framework and the results of Klaic *et al.*'s (2022) review of reviews, we defined feasibility as the degree of practicality of an intervention, demand, ease of delivery and possibility to undertake. Specifically, we measured this through recruitment/participation rate, attrition rate, adverse events, adherence (number of lessons attended, skills practice on average in the last week, and text-based examples of skills applied), reports of feeling that students lived a valued life, and anecdotal descriptions of perceptions/acceptability/training/time/knowledge on the part of the instructors. We expected no adverse events, and low attrition and moderate to high adherence and participation based on past research (Mullen *et al.*, 2021; Pistorello *et al.*, 2013; Pistorello *et al.*, 2016).

For Aim 3, we examined acceptability of the intervention. Again using Klaic *et al.* (2022) and Bowen *et al.* (2009), we defined acceptability as whether or not the intervention was deemed satisfactory, appropriate, fair, and reasonable and helpful to the students. Based on past research, we expected more than half of students to report the intervention to be helpful, to desire to learn

more, and to recommend it to others (Browning *et al.*, 2022; Eustis *et al.*, 2017; Mullen *et al.*, 2021; Pistorello *et al.*, 2013; Pistorello *et al.*, 2016). In terms of specific skill components, we hypothesized *a priori* that students would find mindfulness to be helpful and that they would enjoy it based on the results of Browning *et al.* (2022).

Method

Participants

The study took place within two class sessions of a freshmen seminar in a liberal arts college at a medium size northeastern public university in the United States. The university has large percentages of students who are first-generation college students and utilize financial aid. The study included a quasi-experimental non-equivalent groups design. Both sessions were taught by the same instructor who was a psychology professor. They elected the course based upon the professor and their schedule, without knowing about the potential of the study to participate in. All liberal arts students are required to take this course in their first semester. The curriculum is standardized across all professors, with some sessions that can be tailored to the individual professor's interests and goals. This professor who agreed to participate in the study was a colleague and contact of the study team. Both of her sessions ran on the same day. The study team randomly assigned one session to receive the ACT content, and one to receive their course as usual, with health education content on the days the ACT class received ACT content. All students received lesson content as part of their class time and were asked to reflect on activities they practised outside of class in the same weekly discussion post format of their course. Students could choose to participate in the other research portion of the study with further assessments outside of class.

An *a priori* power analysis on G*Power (Faul *et al.*, 2007) necessitated a sample size of 34 for a .8 power, .05 alpha level, medium effect size, two measurements, two groups and a within between interaction. The control condition class had 19 students enrolled, and seven students participated in the study, and the intervention class had 21 students enrolled, and 14 students consented to participate in the study. This was an overall participation rate of 52.5%. In total, participants in the study were mostly female ($n = 11$; 52%) and White ($n = 14$; 67%). The make-up of the sample actually mirrors and somewhat exceeds institutional enrollment data which reflects around 30–45% people of colour, around 15% Black students and around 7% Asian students among other identity groups (University of Massachusetts Dartmouth, n.d.). Over half of the sample (52.4%) had experience with psychotherapy and almost half (47.6%) had received at least one psychiatric diagnosis. See Table 1 for more information.

Procedure

Safety screening

Questionnaire responses at each time point were screened to identify those with concerning responses. Other data collected in the context of this project involved an assessment of risk behaviours and suicidality (ranging from impulsive behaviours such as shopping and fighting, to substance use, to suicidality and self injury). Responses were flagged as concerning based on severe levels of symptoms on the DASS-21, recent suicidality in the past month, recent self-injury or other substance use or risk behaviour, in congruence with standard clinical suicide risk assessment procedures. This process was done with both graduate students and author E.L.-R., who is a licensed clinical psychologist. Participants whose responses were concerning were not excluded from research participation, but were encouraged to seek support through pathways available at the university. Regardless, all study participants received a list of counseling resources.

Table 1. Participant demographics

Characteristic	n	%	Characteristic	n	%
Gender			Race		
Female	11	52	White	14	67
Male	8	38	Black	6	28.5
Trans	1	4.7	American Indian/Alaska Native	0	0
Gender not listed	1	4.7	Asian	2	9.5
Sexual orientation			Hawaiian/Pacific Islander	0	0
Heterosexual	14	67	Multi-racial	2	9.5
Lesbian	1	4.7	Bi-racial	1	4.7
Bisexual	4	19	Ethnicity		
Gay	1	4.7	Not Hispanic/Latino	14	67
Not listed	1	4.7	Hispanic/Latino	7	33
Do you consider yourself a visible or ethnic minority here?			First language		
Yes	9	42.8	English	18	85.7
No	12	57	Turkish	1	4.7
Experience with psychotherapy			Spanish	2	9.5
Brief experience (1–3 months)	1	4.7	Second language		
Moderate experience (3 months–1 year)	4	19	None	3	14.3
Much experience (1 year or more)	6	28.5	English	3	14.3
No experience	10	47.6	Spanish	5	23.8
History of mental health diagnosis			Albanian	1	4.7
At least one psychological diagnosis	10	47.6	French	1	4.7
Does not have any psychological diagnoses	11	52	Haitian Creole	1	4.7
			Psychology major		
			Yes	8	38
			No	13	62

Graduate student training

Christodoulou *et al.* (2021) emphasized the importance of some clinical and ACT training for delivering basic interventions, even though in-depth training is not necessary. Similarly, Arnold *et al.* (2022) showed in their review that lay providers can effectively deliver ACT. Thoughtful and coordinated training and supervision is important within task shifting structures where lay providers help deliver an intervention (Kazdin and Rabbitt, 2013). While this study was not specifically designed to assess the outcomes of the training component, in the spirit of transparency we report what we did with the training and metrics recorded so that future work could build upon it.

Three psychology graduate students worked to deliver and facilitate the intervention. The students were all students in an applied psychology two-year master's degree program, working with trained clinical psychologists as research mentors, and taking psychopathology-related elective courses with training in differential diagnosis and basic interviewing skills. The lead graduate student (M.B.) was in her second year of the program and had prior training and experience working as a bachelor's degree/entry level counsellor in which she worked supporting and coaching patients in practising and applying skills for addressing anxiety, OCD and emotion dysregulation using ACT, cognitive behavioural therapy, and dialectical behavioural therapy concepts while under licensed supervision. Additionally, her experience included training in crisis/risk assessment.

The other two graduate students had no prior clinical experience or training aside from academic coursework about psychopathology and their research. One was in their first year of the two-year master's program, and one was in her second year. Both students' research was aligned with clinical topics where they had some brief introduction to CBT topics.

A tiered model of supervision was utilized, similar to Balkhi *et al.*'s (2016) progressive cascading model of supervision, where there was some baseline didactic training developed by M.B. and E.L.-R., and much of the training occurred experientially in the context of the

intervention. The lead graduate student participated in supervision and training to competency in supervision skills, and then oversaw supervision of the two more novice graduate students in their skill acquisition. This was all in coordination and supervised by the study PI, who is a licensed psychologist (E.L.-R.).

As part of the baseline training, M.B. provided the other two students with materials about ACT concepts that the intervention was building from, for them to read and watch. The students met for about 2 hours to discuss concepts, and for the novice students to practise describing psychoeducation about ACT generally and while role-playing responding to a potential student comment. Additionally, this meeting focused on basic counselling skills such as validation, active listening, and a need for no self-disclosure about personal mental health topics on the part of the graduate students unless it was done in a way that demonstrated a conclusion to the challenge, and was not graphic or vulnerable beyond what might come up in discussing common life stressors. It was reiterated to the novice students that a licensed clinician spends a lot of time training to use disclosure effectively and safely, and that it was important to balance the level of genuineness and vulnerability needed for experiential treatments like ACT, with knowing that none of the graduate students were licensed, and there was not adequate time in the course-based setting for processing with students if any challenges arose. Although likelihood was low given that the lead graduate student would always be present in class, the other two graduate students were also instructed if a student disclosed things related to self-harm or suicidality to remain as neutral as they could, to validate, and to as discreetly and quickly as they could, pass the information to the lead graduate student so that she could assess and address further.

That main baseline didactic and experiential training occurred the week before the study started, and the lead graduate student also met with the study PI before and after the meeting. During the 5 weeks of the study, the lead graduate student was in touch with the other two students to provide them with the lesson materials ahead of time, answer questions, and delegate roles. The role delegation was done in consultation with E.L.-R. in order to ensure that the graduate students were learning and the goals of the intervention were being met. For example, for the first lesson, one of the new students had prior teaching experience, so she was instructed to shadow the lead student a couple instances and then to walk around and help facilitate small group discussion, but to not engage in much clinical coaching until the lead student had observed her a few times. The other student was completely new to clinical settings and teaching, so he strictly shadowed the lead student the first week. They both progressed in the following two weeks to eventually initiating skills coaching and discussion facilitation with the lead graduate student observing, and then working independently the third week. These opportunities came throughout each lesson as there were times for students to discuss readings in small groups, and then to work on the skill being practised.

Each week, the lead graduate student met with the study PI individually to be in communication about any concerns, such as one student who had seemed visibly distressed, and to discuss progress of lessons and the other graduate students. Additionally, the study PI and all three students met weekly. Those meetings were reserved for problem-solving anything that occurred in the prior lesson, the novice graduate students reflecting on what they were learning and observing, and for further psychoeducation about ACT concepts being covered. These meetings were led by the lead graduate student with support from the PI, and the PI at times directed conversation. Lastly, the lead graduate student was always actively in communication with the PI if anything came up remotely beyond the expected delivery of course content to ensure safety for students and the PI's licence as a provider.

Of note, the lead graduate student was out sick for the fourth lesson, and everyone felt comfortable with the two new graduate students leading the lesson based on the skills they had gained to that point. The communication and supervision infrastructure ensured that the lesson was delivered and the two new graduate students were supported in the process.

Intervention content

All intervention sessions were delivered by at least two facilitators for five consecutive weekly class periods. The control condition class received the seminar's usual curriculum, with the exception of brief educational, health-focused wellness content, in order to ensure the conditions were sufficiently distinct. The entire intervention class received the content regardless of study participation status. They also received 'Stop Avoiding Stuff: 25 Microskills to Face your Fears & Do It Anyway' (Boone *et al.*, 2020) before the intervention. Students received weekly readings and skills practice assignments. Additionally, brief writing reflections asked students to reflect on these experiences for their graded homework as part of their seminar, aligning with the usual curriculum. Importantly, for the entire seminar, most homework assignments consisted of a one paragraph discussion post where students would be asked to reflect on a topic related to their lecture material or something else within their experience as a first-year student. They received full credit if they met the word count requirement (250) and were on topic generally, thus students who did not participate in the study could still fairly and reliably meet their homework requirements, considering that the lecture instructor was present during most sessions so she understood generally what was covered. Lesson topics included an introduction to ACT, discussion of values, mindfulness, willingness and acceptance, committed action, and self-compassion (Hayes *et al.*, 2013a). Additionally, phrases such as being open, aware, accepting, and taking action which are touched on within Strosahl *et al.*'s (2012) approach to brief assessment and intervention, 'Focused Acceptance and Commitment Therapy'. Lesson content outline and references are detailed in Table 2.

Measures

At baseline, students answered questions about demographics. Additionally, they completed validated surveys of psychological processes and outcomes at baseline (one week before lesson 1), post-intervention (the week following lesson 5), and follow-up (6 weeks after the post assessment). At post-intervention and follow-up, students answered questions about skill retention and implementation.

Assessments included across all time points for both groups

All groups completed the following measures. For both groups at baseline combined with the sample included in analyses, all Cronbach's alphas ranged between .73 and .93.

Depression, Anxiety and Stress Scale-21 (DASS-21; Lovibond and Lovibond, 1995)

The DASS-21 is a 21-item validated measure that assesses symptoms of depression, stress and anxiety (Henry and Crawford, 2005; Osman *et al.*, 2012). It is a shortened form of the DASS-42 (Lovibond and Lovibond, 1995), and has been validated for non-clinical and university student populations, and maps onto three subscales of depression, stress and anxiety, as well as a general factor. The depression subscale consists of questions which assess different aspects of anhedonia and hopelessness; the anxiety subscale consists of questions which assess aspects of anxious thoughts as well as physiological hyperarousal; and the stress subscale consists of questions which assess chronic non-specific arousal.

Quality of Life Enjoyment and Satisfaction Questionnaire Short Form (Q-LES-Q-SF; Endicott *et al.*, 1993; Riendeau *et al.*, 2018)

The Q-LES-Q-SF is a valid and reliable single factor self-report measure of satisfaction and enjoyment within various domains of daily living. The life satisfaction and enjoyment score, in the validation study, was correlated with but distinct from mental illness measures. This scale is

Table 2. Wellbeing Wednesdays lesson block plan

Lesson 1 – Get on the Bus: Meet the Bus Driver and the Passengers	Lesson 2 – Listen to the Passengers: Building Awareness	Lesson 3 – Bumps in the Road: Building Openness	Lesson 4 – Charting the Direction: Building Engagement Skills	Lesson 5 – Be Nice to the Bus Driver
<p>Students asked to read Microskill 20 before class and the introduction – pp. 1–16</p> <ul style="list-style-type: none"> • Class overview and guidelines (5 min) • ACT concept introduction (5 min) <ul style="list-style-type: none"> • Introduce bus metaphor as theme for class • Values basics (3 min) • Values ranking and brainstorming activity (15 min) <ul style="list-style-type: none"> • Prompt students to think about the life story they tell and what they want their life story to say as they think about value. Students work in pairs and share as a class to rank their own top values and plan some valued behaviours • Homework assigned (5 min) 	<ul style="list-style-type: none"> • Recap and review (6 min) • Mindfulness/awareness introduction (4 min) <ul style="list-style-type: none"> • Present concepts briefly about internal and external experiences and how mindfulness is a skill • Brief mindfulness skills review (15 min) <ul style="list-style-type: none"> • Microskill 3 – breathing exercise • Review ways students can bring in brief mindfulness to their life • If time, students practise skills in pairs/ individually • Emotions and mindfulness <ul style="list-style-type: none"> • Microskill 4 – mapping an emotion • Homework assigned (5 min) 	<ul style="list-style-type: none"> • Recap and review (6 min) • Building Openness and Acceptance (5 min) <ul style="list-style-type: none"> • Returning to bus metaphor (brief mention of other metaphors like leaves on a stream, theatre spotlight, thoughts on a train) • Passengers on the bus choose your own adventure videos (21 min) <ul style="list-style-type: none"> • Discuss • Practising openness and acceptance Microskill 14 – change the small stuff (8 min) <ul style="list-style-type: none"> • Students prompted to try one thing out of their comfort zone that week • Homework assigned (10 min) 	<ul style="list-style-type: none"> • Recap and review (10 min) • Engagement skills (10 min) <ul style="list-style-type: none"> • Taking risks and engaging openly with values is important • We can do this in small steps to build up to bigger goals • Microskill 17 – bold moves (20 min) <ul style="list-style-type: none"> • Review as a class • Brainstorm in pairs and as class options to move towards bold move • Can brainstorm more change the small stuff skills as well • Homework assigned (5 min) 	<ul style="list-style-type: none"> • Microskill 22 – loving kindness meditation (6 min) • Recap and review (15 min) • Self-compassion and forgiveness (6 min) <ul style="list-style-type: none"> • Be nice to ourselves – ‘the bus driver’ on our bus • This helps us be effective in engaging openly in daily life • Microskill 21 – be gentle (10 min) <ul style="list-style-type: none"> • Review • Practice in class • Bold move plan (11 min) <ul style="list-style-type: none"> • Plan with group members more steps towards bold move (Microskill 17) for the semester • Wrap-up discussion (6 min)

Note: Italics reflect an in-class read, pair, share activity.

References for intervention:

- Boone, M., Gregg, J., & Coyne, L. (2020).
 Boone, M. S., & Myler, C. (2012).
 Browning, M. E., Morena, A., Gould, E. R., & Lloyd-Richardson, E. E. (2022).
 Ciarrochi, J., Atkins, P., Hayes, L., Sahdra, B., & Parker, P. (2016).
 Clarke, S., Kingston, J., James, K., Bolderston, H., & Remington, B. (2014).
 Clarke, S., Kingston, J., Wilson, K. G., Bolderston, H., & Remington, B. (2012).
 Danitz, S., & Orsillo, S. (2014).
 Danitz, S., Suvak, M., & Orsillo, S. (2016).
 Eustis, E. H., Williston, S. K., Morgan, L. P., Graham, J. R., Hayes-Skelton, S. A., & Roemer, L. (2017).
 Harris, R. (2009).
 Harris, R. (2008).
 Harris, R. (2019).
 Hayes, L., Ciarrochi, J., & Hayes, S. (2015).
 Hayes, S. C., & Smith, S. (2005).
 Hayes, S., Strosahl, K., & Wilson, K. (2011).
 Hayes, S. C., Levin, M. E., Plumb-Villardaga, J., Villatte, J. L., & Pistorello, J. (2013a).
 Oliver, J. (2011).
 Räsänen, P., Lappalainen, P., Muotka, J., Tolvanen, A., & Lappalainen, R. (2016).
 Stafford-Brown, J., & Pakenham, K. (2012).
 Strosahl, K. D., Robinson, P. J., & Gustavsson, T. (2012).
 University College Dublin (2021).

calculated as a percentage of the total possible score such that scores can be interpreted as a percentile of quality of life.

Unified Flexibility and Mindfulness Scale (UFM; Rogge & Daks, 2021)

The UFM is a 28-item scale that assesses both psychological flexibility and inflexibility according to components of the ACT hexaflex in a process-based and context-sensitive way that is relatively new and more comprehensive by using questions from the Multidimensional Psychological Flexibility Inventory (MPFI; Rolffs *et al.*, 2016), as well as the Five Facet Mindfulness Questionnaire (FFMQ; Baer *et al.*, 2006). The UFM assesses flexible mindfulness and inflexible mindlessness as two different subscales. The scale of flexible mindfulness can further be separated into eight subscales which each measure a separate facet of flexible mindfulness (describing thoughts/feelings, observing sensations, acceptance, present moment awareness, self as context, defusion, values, and committed action). Similarly, the scale of inflexible mindlessness can be separated into six other subscales (experiential avoidance, lack of contact with the present moment, self as content, fusion, lack of contact with values, and inaction). This study utilized the inflexible mindlessness (psychological inflexibility) and flexible mindfulness (psychological flexibility) scales.

Post and follow-up questions for ACT group only

At post-intervention, participants in the ACT group were asked to rate whether or not they found the intervention helpful, whether or not they desired to learn more, and whether or not they would recommend it to others. They were also asked to describe what parts of the intervention they found most and least helpful, and liked and disliked (Browning *et al.*, 2022; Firestone *et al.*, 2019). These analyses align also with Mullen *et al.*'s (2021) assessment of 'receptivity and helpfulness' in their ACT intervention. They align with the importance of assessing how acceptable an intervention is to participants which encompasses components related to their perceived feelings and experiences in the intervention, and their perceived associated burden and opportunity costs; acceptability can affect adherence in an intervention (Sekhon *et al.*, 2017).

At post- and follow-up intervention participants reported what ACT skills they practised most frequently, and provided examples with quantitative ratings about the past week, and text-based responses (Browning *et al.*, 2022).

Analysis plan

All analyses were calculated with IBM SPSS version 28 (IBM Corporation, 2021).

Missing data

For Aim 1, with listwise deletion, there were six participants in the intervention condition and three participants in the control condition who completed baseline and post assessments. Missing data was 57% for the intervention and 50% for the control. Follow-up data were not included in final assessments because this would have lowered the listwise *n* numbers to 5 and 1 for the intervention and control.

For Aims 2 and 3, for all quantitative rating questions, at post-assessment, 10 students completed the surveys out of 14, and for the specific questions for feasibility and for acceptability, seven students answered, leaving missing data at 50%. At follow-up, for rating on skills practised and a valued life, eight students completed surveys but six answered the specific questions for these aims, leaving missing data at 57%.

For text responses for Aim 3 (acceptability), five and six students answered each question about helpful aspects and unhelpful aspects, and likes and dislikes, leaving missing data at 57–64%. For

the text responses for Aim 2 (feasibility), seven students provided responses at post assessment, leaving missing data at 50%, and two at follow-up, leaving missing data at 86%.

Aim 1: To examine changes in mental health and wellbeing across the intervention

Aim 1 was to examine the limited efficacy of the intervention, and we did so with non-parametric tests given the small sample size. This aligns with Bowen *et al.*'s (2009) guidelines which reflect that a limited efficacy test in a feasibility study may utilize convenience samples, short follow-ups, and may have limited statistical power. This study is an example of testing expansion, or the extent to which a previously tested program (ACT) can be tested in a new setting (the classroom first year seminar setting at our university). We examine changes from pre to post intervention in each outcome (quality of life and psychological distress) as well as process (psychological flexibility) with non-parametric tests and we also report effect sizes in the context of prior research. Of note, we had originally planned mixed design ANOVAs or paired samples *t*-tests across pre, post and follow-up, but abandoned the parametric tests and inclusion of follow-up means with the low assessment completion.

Aim 2: Feasibility

For Aim 2, combining Bowen *et al.*'s (2009) feasibility framework and the results of Klaic *et al.*'s (2022) review of reviews, we defined feasibility as the degree of practicality of an intervention, demand, ease of delivery and possibility to undertake. We measured feasibility through the percentage of students who participated in the study initially out of the potential total (recruitment rate), the percentage who completed all three assessments (participation rate), the percentage of sessions attended (participation rate), reports of adverse events or drop-out (attrition), the average number of homeworks completed (adherence), skills practised on average in the last week (adherence), reports of whether students agreed they were living a life that aligned with their values, and anecdotal descriptions of perceptions/acceptability/training/time/knowledge on the part of the instructors.

We also measured adherence through descriptively reporting skills practised over the course of the intervention.

Specifically, qualitative responses were coded according to categories of mindfulness, acceptance, committed action, considering values, self-compassion, or other, with cognitive defusion considered part of mindfulness. Participants received one point for each instance of a skill reported; this coding scheme is based on responses and coding from Browning *et al.* (2022). M.B., and A.T., who is a trained graduate research assistant and co-author, coded responses within specific questions for helpfulness, and likes/dislikes. Initial 80% inter-rater reliability was achieved such that A.T. and M.B. aligned by at least 80% for scoring within each code for each question aside from the 'other' category which was treated as exploratory. Any discrepancies were agreed on by M.B., A.T. and E.L.-R. until full agreement was reached. Frequencies were reported.

Aim 3: Acceptability

Specific components referenced in both papers include satisfaction, intent to continue to use, perceived positive and negative effects and perceived appropriateness and recommendation to others. We measured this quantitatively through asking participants whether or not they felt the intervention was helpful, and whether or not they would recommend it to someone else and desired to learn more. Additional qualitative questions asked participants to report aspects of the intervention that they found helpful and unhelpful, and that they liked and did not like. Responses were coded in the same manner described in Aim 2.

Results

Aim 1: Limited efficacy

Bakker *et al.* (2019) recommend that when reporting effect sizes, they should be contextualized with study goals and past effect sizes in the literature. A recent meta-analysis of ACT interventions for university students that focused on a goal of wellbeing found a pooled effect size of $d = .29$, which they said is in line with other well-being focused positive psychology interventions (Howell and Passmore, 2019). For past studies of ACT for college students, and in a review of overall studies of ACT, there were effect sizes Cohen's $d < .15$ and $.3 < \text{Hedge's } g < .49$ for quality of life, psychological flexibility, and depression.

Additionally, we report Hedges' g effect size as provided by SPSS to somewhat correct the bias of Cohen's d in small sample sizes (Goulet-Pelletier and Cousineau, 2018). We mostly compare effect sizes to past related studies, but also to Cohen's (1988) and (1992) guidelines which state that for Hedge's g , .2 is a small effect size, .5 is medium, and .8 is large.

We assessed changes from baseline to post-intervention in quality of life, depression, stress, anxiety, psychological inflexibility and psychological flexibility. We did so separately for the intervention condition and the control condition.

For the intervention condition, with Wilcoxon signed rank tests, there were not significant changes in psychological flexibility ($Z = -.18$; $p = .85$), quality of life ($Z = -.23$; $p = .22$), depression ($Z = -.82$; $p = .41$), stress ($Z = -.14$; $p = .89$) and anxiety ($Z = -.54$; $p = .59$). The p -value was under .1 but still non-significant for changes in psychological inflexibility ($Z = -1.69$; $p = .09$). Effect sizes and confidence intervals for change were as follows for psychological flexibility [Hedges' $g = -.17$; 95% CI (-.91, .58)], psychological inflexibility [Hedges' $g = .82$; 95% CI (-.09, 1.68)], quality of life [Hedges' $g = .51$; 95% CI (-.31, 1.23)], depression [Hedges' $g = .37$; 95% CI (-.42, 1.12)], stress [Hedges' $g = 0$; 95% CI (-.74, .74)], anxiety [Hedges' $g = .19$; 95% CI (-.57, .93)]. For everything except stress, changes were in expected directions (lowered distress and psychological inflexibility, and improved psychological flexibility and quality of life). Effect sizes for psychological inflexibility were higher than past studies, effect sizes for anxiety were lower, and effect sizes for quality of life and depression mirrored past studies. These effect sizes were all small to medium according to Cohen's (1988) and (1992) directions as well, except for psychological inflexibility which was large, and stress which was 0.

For the control condition, with Wilcoxon signed rank tests, there were not significant changes in psychological flexibility ($Z = -1.60$; $p = .11$), psychological inflexibility ($Z = -.82$; $p = .41$), quality of life ($Z = -.27$; $p = .79$), depression ($Z = 0$; $p = 1.00$), stress ($Z = -1.34$; $p = .18$) and anxiety ($Z = -1.34$; $p = .18$). Effect sizes and confidence intervals for change were as follows for psychological flexibility [Hedges' $g = .89$; 95% CI (-.36, 2.07)], psychological inflexibility [Hedges' $g = -.46$; 95% CI (-1.41, .58)], quality of life [Hedges' $g = .21$; 95% CI (-.74, 1.11)], depression [Hedges' $g = -.29$; 95% CI (-1.21, .68)], stress [Hedges' $g = -.87$; 95% CI (-2.02, .37)], and anxiety [Hedges' $g = -.76$; 95% CI (-1.85, .43)]. For each variable in the control condition, scores worsened (higher distress and psychological inflexibility, lower quality of life and psychological flexibility). For everything except stress, changes were in expected directions (lowered distress and psychological inflexibility, and improved psychological flexibility and quality of life). Effect sizes ranged from small to large according to Cohen's (1988) and (1992) guidelines. See Table 3 for details on results.

Aim 2: Feasibility

The control condition class had 19 students enrolled, and seven students participated in the study, and the intervention class had 21 students enrolled, and 14 students consented to participate in the study. This was an overall recruitment rate of 52.5%. As described in the missing data paragraph, missing assessment data from post and follow-up ranged from 50 to 86% so there was high

Table 3. Changes from baseline to post in mental health, wellbeing and psychological flexibility

Intervention	Baseline		Post		Paired difference		Hedges' <i>g</i> [95% CI] [LL, UL]	<i>Z</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Control	Psychological flexibility	66.33	16.12	67.17	11.01	-.83	4.49	-.17 [-.91, .58]	-.18
	Psychological inflexibility	38.17	10.30	35.67	4.62	2.50	2.81	.82 [-.09, 1.68]	-1.68
	Quality of life	76.79	8.07	72.62	0.91	4.17	7.54	.51 [-.31, 1.29]	-1.23
	Depression	9.00	8.56	7.00	6.78	2.00	5.06	.37 [-.42, 1.19]	-.82
	Stress	9.00	6.54	9.00	6.03	.00	3.57	0 [-.74, .74]	-.14
	Anxiety	8.00	7.58	7.33	6.65	.67	3.27	.19 [-.57, .93]	-.54
	Psychological flexibility	78.00	11.36	67.33	15.53	10.67	9.50	.89 [-.36, 2.07]	-1.60
	Psychological inflexibility	44.00	16.09	48.00	19.97	-4.00	7.00	-.46 [-1.41, .58]	-.82
	Quality of life	72.02	13.63	67.86	22.37	4.17	16.00	.21 [-.74, 1.11]	-.27
	Depression	13.33	4.62	18.67	17.47	-5.33	14.47	-.29 [-1.21, .68]	.00
	Stress	19.33	13.32	22.67	10.26	-3.33	3.06	-.87 [-2.02, .37]	-1.34
	Anxiety	14.00	12.17	20.67	14.05	-6.67	7.02	-.76 [-1.85, .42]	-1.34

attrition on assessments. When considering adherence, the average number of lessons attended was 4 (range 2–5; $SD=1.3$). There were five possible homework reflections, and research participants on average completed three homeworks (range 0–5; $SD=1.47$).

Of students who completed the post assessment, most students reported practising mindfulness at least 2 days in the previous week ($n=5$; 71%), as well as the microskills taught in the intervention ($n=5$; 71%), and valued behaviours ($n=4$; 57%). Most students agreed that they ‘live a life in line with the characteristics, ideas, goals, and activities that matter to me’ ($n=5$; 71%) and the other two students selected neutral, not disagree. At follow-up, 50% ($n=3$) of students reported engaging in the microskills at least 1 day in the previous week, 50% ($n=3$) reported engaging in mindfulness at least 1 day in the previous week, and 33% ($n=2$) reported engaging in valued behaviours at least 2 days in the previous week. Most students agreed that they lived a life in line with their values ($n=5$; 71%) and the other student who did not agree, selected neutral and not disagree.

For analysis of text-based responses of skills practised, at post assessment, mindfulness ($n=5$; 71%), noticing avoidance and addressing it ($n=4$; 57%), and committed action ($n=3$; 43%) were most often reportedly used outside of intervention. At follow-up, few students reported using ACT skills, with the exception of mindfulness ($n=2$; 29%). See Table 4 for information on qualitative results from Aim 2.

There were no adverse events reported for research participants.

With respect to the feasibility of the clinical training of the graduate students, there were no formal assessments of knowledge given. Anecdotally, students and ELR all enjoyed the experience and were able to fall into a routine of communication between sessions and weekly supervision. Of note, the lead graduate student (M.B.) was sick in week 4, and the other two students both felt comfortable and confident delivering the lesson. The participants expressed to M.B. the following week how much they enjoyed learning from the other graduate students.

Aim 3: Acceptability

Of students that completed assessments at post intervention, 100% ($n=6$) felt the intervention was helpful, 67% ($n=4$) desired to learn more, and 67% ($n=4$) would recommend it to someone else.

Within text responses, the most favorably endorsed skills were mindfulness ($n=3$, 50%), and committed action ($n=2$; 33%). Few students disliked any of the intervention skills, with only one (16.7%) disliking mindfulness and one (16.7%) disliking committed action. For skills found helpful, mindfulness was most frequently endorsed ($n=6$, 100%) and 16.7% of students ($n=1$) found committed action unhelpful. See Table 5 for information on qualitative results from Aim 2.

Discussion

Summary of results

This study describes a pilot implementation of a brief ACT-based classroom intervention in a freshman required course. The sample sizes were very small, so results should be interpreted mostly as descriptive and preliminary. That being said, interestingly the study was only moderately acceptable according to students within the various metrics that were assessed.

Aim 1: Changes in mental health

In terms of outcomes and processes, the intervention increased and decreased in expected directions, and the control condition course either worsened or did not change in each variable, but there were no significant differences within each group, and the sample size was very small. Effect sizes had wide variation, but for depression and quality of life in the intervention condition,

Table 4. Themes of participants skill engagement

Assessment timeline	Sub-themes	Example quotes
Post intervention	Mindfulness ($n = 5$; 71%)	'Changing the small stuff has allowed me to become more aware and present in whatever I am doing. For me, this included taking new/different routes to and from school (I commute) and being present in my driving and my music and not just mindlessly driving because I know the route'
		'I have become more aware of my thoughts and my actions such as being more aware of the world around me instead of being "isolated" by distractions such as my phone'
		'Practise mindfulness on any random moment, and just being aware of the things around me and my feelings'
		'I became more aware of my emotional responses'
		'I have began being mindful every day and noticed when I am avoiding and when to stop'
	Committed action ($n = 3$; 43%)	'Changing the small stuff has allowed me to become more aware and present in whatever I am doing. For me, this included taking new/different routes to and from school (I commute) and being present in my driving and my music and not just mindlessly driving because I know the route'
		'Doing something different to get to the same destination, i.e. class or cafeteria'
		'I procrastinated less'
	Other: noticed avoidance and addressed it ($n = 4$; 57%)	'I have began being mindful every day and noticed when I am avoiding and when to stop'
		'I procrastinated less'
Follow-up to intervention	Mindfulness ($n = 2$; 100%)	'I have become more aware of my thoughts and my actions such as being more aware of the world around me instead of being "isolated" by distractions such as my phone'
		'Changing the small stuff has allowed me to become more aware and present in whatever I am doing. For me, this included taking new/different routes to and from school (I commute) and being present in my driving and my music and not just mindlessly driving because I know the route'
		'I have begun to focus on the little things in my life and not constantly function on autopilot; specifically when walking around and driving to school, I do not take the same routes to be able to truly take in my surroundings'
		'Being aware of my actions and surroundings'

Note. Overall, 7 of 14 intervention participants answered the skills question at post, and 2 out of 14 answered it at follow-up. Percentages are out of the total completed for that aim. Themes coded by two raters are based on Browning *et al.* (2022).

they were similar to past research. Psychological inflexibility also had a large effect size for change in the intervention condition and a p -value that neared significance, so while small sample sizes can inflate effect sizes, there may have been some evident improvement in psychological inflexibility.

It is important to note that ACT interventions in school-related settings and those that target wellbeing often find small to medium effect sizes, and studies do not always find between-group differences on wellbeing outcomes (Howell and Passmore, 2019; Petersen *et al.*, 2022). Furthermore, other studies such as Clarke *et al.* (2012), have found an incubation effect, where the processes in ACT and skills learned show strongest effects at a longer follow-up such as around

Table 5. Participant reports of skills liked and disliked, and skills found helpful and unhelpful

Area of interest	Sub-themes	Example quotes
Skills liked	Mindfulness (<i>n</i> = 3; 50%)	‘I liked the skills about being kinder to yourself and to be bolder because I found that both stem from a place of anxiety about success, achievement, etc.’ ‘Learning how to pay attention to myself and my surroundings’ ‘Practising mindfulness’
	Committed action (<i>n</i> = 2; 33%)	‘I liked the skills about being kinder to yourself and to be bolder’ ‘Changing the small stuff was the skill I like the most because it is easy and simple to just change one part of your normal day, and it just shows how changing one simple thing in your life can make a big difference’
	Considering values (<i>n</i> = 1; 16.7%)	‘I liked that we kept our goals in mind’
	Self-compassion (<i>n</i> = 1; 16.7%)	‘I liked the skills about being kinder to yourself’
	Other (<i>n</i> = 2; 33%)	‘Changing the small stuff skill’ ‘The in-class discussions that we had were really nice, we all got a chance to learn from one another’
Skills found helpful	Mindfulness (<i>n</i> = 6; 100%)	‘Building awareness is the skill I found the most helpful because now I use it when I feel overwhelmed to bring myself back and be in tune with what is happening around me’ ‘I found that becoming self-aware of negative habits or thoughts that could impede you in some manner and then taking action to get out of said habit was helpful’ ‘Being more patient in general, stop going through life on auto-pilot’ ‘Practising mindfulness’ ‘Meditation’ ‘It taught me things like mindfulness that I was never able to understand or practise before’
	Committed action (<i>n</i> = 2; 33%)	‘... and then taking action to get out of said habit was helpful’ ‘... readings did not help much, actions were better’
	Other – noticed avoidance and did something about it (<i>n</i> = 2; 33%)	‘I found that becoming self-aware of negative habits or thoughts that could impede you in some manner and then taking action to get out of said habit was helpful’ ‘... stop going through life on autopilot’
		‘Tracking behaviours, because it just made me think about feelings and behaviours I am not proud of’
Skills disliked	Mindfulness (<i>n</i> = 1; 16.7%)	‘Tracking behaviours, because it just made me think about feelings and behaviours I am not proud of’
	Committed action (<i>n</i> = 1; 16.7%)	‘Making bold moves is the skill I like the least because it really takes a lot for me to push myself out of my comfort zone and do something different’
	Other (<i>n</i> = 3; 50%)	Bold moves; Tracking behaviors; ‘Reading the book, practising things over and over again became repetitive’
Skills found unhelpful	Committed action (<i>n</i> = 1; 16.7%)	‘Making bold moves is what I found the most unhelpful simply because I haven’t made any bold moves yet’
	Other (<i>n</i> = 2; 33%)	‘The readings did not help much’ Bold moves

6 months, where people have had more opportunities to engage with daily life in the present and valued way they practised in the intervention.

Thus, potentially these results suggest that this intervention can serve as a buffer against the natural declines in mental health over the course of a college semester. It may be that further change would have been found with longer follow-up, and more robust assessment participation.

The non-significant results could also be due to lack of power and the small sample size. There are potential cohort effects related to the attrition with assessments. Participation was very low, even though students were compensated for each assessment and given extra credit if they completed all assessments in the intervention class. This lower participation might be because students were freshmen coming out of years of school impacted by COVID, and did not have the foundational knowledge of the importance of research participation that they might later have impressed upon them in their liberal arts curriculum. It is also possible that there were specific differences with this cohort of students as many of them did not complete the freshman seminar along the same curricular timeline that most students do.

The non-significant results could also reflect that this intervention was not robust enough to influence changes in target processes or outcomes. Potentially additional homework support and engagement outside of class, or further work with motivational interviewing concepts could support initial buy-in and engagement. Alternatively, perhaps this reflects why other projects have utilized a design where students can sign up for the course, so they have initial motivation to participate.

Aim 2: Feasibility

In terms of feasibility, of students that completed assessments, there was only moderate participation in the research assessments outside of class, and there was high attrition in assessments at post-intervention and follow-up. That being said, on average, most participants attended most class sessions during the study, and of the students who completed assessments, they reported frequent skills practice in the past week, and their skills mapped onto expected domains after ACT treatment.

Most students agreed at post-assessment and follow-up that they lived a life that aligned with their values and priorities. This is not a validated measure, but represents an example of an idiographic assessment of a specific psychological flexibility component. Other measures such as the Personalized Psychological Flexibility Index (PPFI; Kashdan *et al.*, 2020) are being created to better assess individual change within valued actions and working towards goals, and they could be used in future course-based ACT interventions.

As expected, mindfulness was the most frequently endorsed skill applied at post and follow up after coding of open response answers. Close behind, about one-third of participants reported engaging in committed action. Importantly, over half (57%) of students endorsed noticing avoidance and addressing it, in relation to mindfulness. This shows students used mindfulness as a tool to accept circumstances and engage in valued actions, instead of using it to control thoughts and feelings (Tiff *et al.*, 2022). All of these feasibility reports should be interpreted with caution, given that they represent a sub-sample of research participants who completed assessments.

Aim 3: Acceptability

Over half of participants endorsed the intervention as helpful, aligning with past research that students enjoy brief ACT interventions (Browning *et al.*, 2022; Mullen *et al.*, 2021).

Less than half of the sample indicated they would recommend ACT or would want to learn more, not aligning with hypotheses. This might reflect response bias, or that participants found the intervention helpful, but were not motivated to continue further. Considering the Theory of Planned Behaviour, students appeared to have neutral attitudes towards the intervention, and

perhaps there were moderate influences of social norms of the class and perceived behavioural control (Ajzen, 1991). Further work could integrate contact with others' lived experiences of mental health and treatment in college, or even of that intervention, in order to better support intentions to engage in the treatment.

We expected students to enjoy mindfulness and find it most helpful. Results echo this, but committed action was close behind for a skill most enjoyed. Results mostly align with past research Browning *et al.* (2022) found and summarized or that of Mullen *et al.* (2021). Qualitative results reflect natural variation, and also some perceived challenges in engaging with difficult internal and external experiences as part of ACT. Overall, results echo past support that ACT interventions embedded in classes and college settings are useful and helpful, although these results reflected overall moderate acceptability (Browning *et al.*, 2022; Christodoulou *et al.*, 2021; Mullen *et al.*, 2021; Petersen *et al.*, 2022; Pistorello *et al.*, 2013; Pistorello *et al.*, 2016).

Limitations

Next, we reflect on some study limitations. Analyses in this manuscript from the intervention are based on a very small sample size of participants who consented to participate in the research portion of the project and completed all assessments. Therefore results should be interpreted with caution, and as mostly descriptive. Moreover, while effect sizes are somewhat promising and in expected directions, Cohen's *d* and Hedges' *g* effect sizes have a higher tendency to over-estimate population effect sizes with a smaller sample size (Goulet-Pelletier and Cousineau, 2018). Participation may have been impacted with assessments due to them being outside of class, or students not properly understanding the importance and context of research assessments.

The sampling for this study occurred with an instructor who taught two sessions of the same course. While students were not aware of the option of study participation at the time of course enrolment, they did choose to enrol in this class based on the instructor's background as a psychology professor and on the students' schedule. Therefore there may be limits to generalizability. The study also occurred during COVID-19, providing important context to the mental health of university students currently but those cohort effects will always follow results.

The intervention curriculum was designed using evidence-based sources from an ACT lens, but was delivered and organized according to the training background of the study team. While a recent review article found that ACT can be delivered successfully by lay providers and improve distress and health behaviours (Arnold *et al.*, 2022), there may be limitations with the training of the student providers and supervision structure that could be further addressed through targeted changes in the training program.

There were no checks aside from self-report to oversee how students practise skills outside of class, so it is unknown for sure, if at all, how many students practised skills and to what extent. The intervention was given universally to students in the class, with suggestions to students to differentiate according to their own needs, but this means students needing more intensive support might not get the full extent of treatment that they would benefit from.

Future directions

Future projects should focus on how to build assessments and other research components into class time to ensure participation in assessments, and focus on skills practice outside of the intervention. Scheduled and structured support outside of a direct intervention might be helpful (Shim *et al.*, 2017), such as peer-support coaching which facilitated adherence in Klimczak *et al.*'s (2023) study.

Christodoulou *et al.* (2021) echo the importance of creatively embedding skills-based supports in college settings. More work should continue in course-based settings like this study did, given the theoretical support but need for further testing and implication on a larger scale. As Browning

et al. (2022) discuss, further studies could explore other course settings such as existing courses that students are required to take for a certain major, or those that are more general such as the freshman seminar this study was implemented in, or other elective courses. As Danitz *et al.* (2016) also reflect on after their projects implementing acceptance-based treatments in university settings, these treatments are ideally implemented in a required part of the college setting such as a course or orientation module, but there are difficulties with limited time, money, and competing priorities, so online options are another potential direction. They discuss the importance of also gaining a better understanding of the benefits of universally provided supports versus those in settings students self-select into, such as when they sign up for an elective course. This is the structure that Chugani *et al.* (2020) are taking in their project.

Along these lines, the degree of group support should be considered. As many people have discussed, such as Zancan *et al.* (2023) and Conley *et al.* (2013b), often stigma is a barrier to students even deciding to access care. However, group and curriculum-based ACT seems to alleviate some of these challenges where students feel empathy towards fellow students while they work together to learn skills and problem-solve (Browning *et al.*, 2022; Zancan *et al.*, 2023). The benefits of group support with the necessary time, resources, and institutional support should be weighed and assessed.

Intervention programs should integrate trainees wherever possible in delivering skills, and should continue to streamline and assess the utility of brief trainings that target embodied cognition of trainees (Kosmas and Zaphiris, 2018). This can further vary available mental health treatments and democratize clinical training opportunities to decrease the public health burden of mental illness and expand the number of providers who are trained in evidence-based practice (Ernestus *et al.*, 2022; Forcino *et al.*, 2022; Kazdin and Blase, 2011; McCarty *et al.*, 2022).

This could be scaled by utilizing it as a practicum opportunity for clinical programs at various degree levels (Forcino *et al.*, 2022), or a way for peers who completed the intervention to be involved. Petersen *et al.* (2022) echo the importance of examining other types of deliverers of ACT school-based treatments. Assessing outcomes related to the training could explore if students involved have a more positive and enriching college experience, or if their future choices of evidence-based practice and health service careers are influenced (McCarty *et al.*, 2022). Additionally, treatment outcomes could be compared based on who delivered the treatment and the training they had received, as well as other variables related to how the participants interpreted the treatment, such as assessing treatment acceptability (Sekhon *et al.*, 2017).

Another path towards scaling related interventions would be considering how to effectively train university professionals and faculty on how to deliver intervention components in a way that is safe and promotes their self-efficacy. A recent report by Lipson *et al.* (2021) found that faculty currently recognize that they often respond to student mental health concerns, and they feel they currently do not have enough training to feel comfortable doing so. While this study was delivered by students within an existing course, a future study could train instructors to deliver the intervention content.

Students enjoyed mindfulness and found it helpful, and future work should explore how messaging, terms, and psychoeducation about mindfulness can influence students' mental health and engagement in ACT interventions (Tiff *et al.*, 2022). Health behaviours are important for college students, so future interventions should involve direct conversations and skills practice surrounding things like healthy sleep (Gusman *et al.*, 2021). Committed action skills are similarly important to explore given the importance of feeling skilled enough for things such as communicating with professors, engaging in health behaviours, navigating challenging social situations, or taking steps to reach professional goals in college. Work like that of Viskovich *et al.* (2021), who detail students' values and experiences in ACT-based values exercises could be used to further tailor values and experiential exercises towards college students and university contexts.

Given many different mindfulness-based interventions can support university students including ACT, mindfulness-based stress reduction (MBSR), and mindfulness-based CBT (MBCBT) (Ma *et al.*, 2022), relevant processes and components could be examined to tailor

interventions. This aligns with Stenhoff *et al.*'s (2020) recommendation that future research examine how components of ACT like cognitive defusion influence subjective well-being. Large enough sample sizes will be needed in order to differentiate amongst multiple processes of change unlike we were able to in the current project.

Additionally, there was only moderate acceptability and participation in the current study, so intentions and engagement/participation need to be strengthened. More change-oriented skills from cognitive behavioural therapy that focus on challenging irrational thought patterns and unhelpful behaviours compared with acceptance could be helpful, as well as motivational interviewing focused coaching interventions (Abelson *et al.*, 2022). Gonçalves (2023) discussed processes of change and activities involved in ACT, and solution focused therapy approaches and described their conceptual overlap. He emphasized the importance of honest accounting of shared processes across therapies, and continued work to personalize treatments within specific contexts. Solution focused therapy concepts could help inform brief interventions for university students as well given their focus on hope, strengths, and goals, such as within the single session format delivered by Schleider *et al.* (2021).

Throughout any future work, assessments for feasibility and acceptability should be further considered, standardized, and should be in line with current understanding of measurement in ACT treatment. For example, as idiographic measurements develop, such as the PPFI, these can be included (Kashdan *et al.*, 2020). Assessments of treatment fidelity (Ong *et al.*, 2023; O'Neill *et al.*, 2019) and therapist knowledge of ACT concepts (Luoma and Plumb, 2013) can be included. Assessments of acceptability should align with theoretically coherent frameworks and concepts and should move beyond pure ratings of satisfaction. As an example, Sekhon *et al.*'s (2022) measure guidelines allow for a structured assessment of perceptions of an intervention. This work will allow for more thoughtful and comprehensive understanding of participants' experiences in ACT interventions.

The current study demonstrates an application of a brief randomized ACT intervention embedded in a freshman seminar for university students, delivered by trained but unlicensed graduate students, that students enjoyed and found helpful. The sample size was very small so results should be interpreted mostly as descriptive, and the literature reviewed could help generate future studies. Interventions such as the one described in this study are important to pursue as our society seeks to support our young people as they struggle with broad mental health challenges and transition into adulthood. Research should be blended with tests of effectiveness and implementation to be blended for maximum public health impact (Beidas *et al.*, 2023).

Key practice points

- (1) Acceptance and commitment therapy can be integrated into an existing freshman seminar curriculum and delivered by unlicensed psychology students with supervision.
- (2) Acceptance and commitment therapy can be targeted to both wellbeing and psychological distress outcomes.
- (3) Students will moderately engage with acceptance and commitment therapy skills outside of class and show a moderate desire to learn more.

Further reading

- Abelson, S., Lipson, S. K., Eisenberg, D., & Bowman, N. A. (2022). Mental health in college populations: a multidisciplinary review of what works, evidence gaps, and paths forward. In *Higher Education: Handbook of Theory and Research* (pp. 133–238). Springer International Publishing. https://doi.org/10.1007/978-3-030-76660-3_6
- Christodoulou, V., Flaxman, P. E., & Lloyd, J. (2021). Acceptance and commitment therapy in group format for college students. *Journal of College Counseling, 24*, 210–223.
- Howell, A. J., & Passmore, H. A. (2019). Acceptance and commitment training (ACT) as a positive psychological intervention: a systematic review and initial meta-analysis regarding ACT's role in well-being promotion among university students. *Journal of Happiness Studies, 20*, 1995–2010.

Data availability statement. The data that support the findings of this study are available from the corresponding author, M.B., upon reasonable request.

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Author contribution. **Morgan Browning:** Conceptualization (lead), Data curation (lead), Formal analysis (lead), Funding acquisition (lead), Investigation (lead), Methodology (lead), Project administration (lead), Resources (equal), Supervision (equal), Writing – original draft (lead), Writing – review & editing (lead); **Elizabeth Lloyd-Richardson:** Conceptualization (supporting), Formal analysis (supporting), Funding acquisition (supporting), Investigation (supporting), Methodology (supporting), Project administration (supporting), Resources (supporting), Supervision (lead), Writing – original draft (supporting), Writing – review & editing (equal); **Akshay Trisal:** Data curation (supporting), Formal analysis (supporting), Investigation (supporting), Project administration (supporting), Writing – review & editing (supporting); **Victoria Kelleher:** Project administration (supporting), Writing – original draft (supporting), Writing – review & editing (supporting); **Mary Kayyal:** Conceptualization (supporting), Formal analysis (supporting), Supervision (supporting), Writing – review & editing (supporting); **Anna Schierberl Scherr:** Conceptualization (supporting), Supervision (supporting), Writing – review & editing (supporting).

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Ethical standard. The authors have abided by the Ethical Principles of Psychologists and Code of Conduct as set out by the APA (<http://www.apa.org/ethics/code/>) which align with the Ethical Principles of Psychologists and Code of Conduct as set out by the BABCP and BPS. This study was approved by the university’s Institutional Review Board (approval number 21.056). All participants provided consent.

References

- Abelson, S., Lipson, S. K., Eisenberg, D., & Bowman, N. A. (2022). Mental health in college populations: a multidisciplinary review of what works, evidence gaps, and paths forward. In *Higher Education: Handbook of Theory and Research* (pp. 133–238). Springer International Publishing. https://doi.org/10.1007/978-3-030-76660-3_6
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211.
- Arnold, T., Haubrick, K. K., Klasko-Foster, L. B., Rogers, B. G., Barnett, A., Ramirez-Sanchez, N. A., . . . & Gaudiano, B. A. (2022). Acceptance and commitment therapy informed behavioral health interventions delivered by non-mental health professionals: a systematic review. *Journal of Contextual Behavioral Science*.
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, 13, 27–45. <https://doi.org/10.1177/1073191105283504>.
- Bakker, A., Cai, J., English, L., Kaiser, G., Mesa, V., & Van Dooren, W. (2019). Beyond small, medium, or large: points of consideration when interpreting effect sizes. *Educational Studies in Mathematics*, 102, 1–8. <https://doi.org/10.61007/s10649-019-09908-4>
- Balkhi, A. M., Reid, A. M., Guzick, A. G., Geffken, G. R., & McNamara, J. P. (2016). The progress cascading model: a scalable model for teaching and mentoring graduate trainees in exposure therapy. *Journal of Obsessive-Compulsive and Related Disorders*, 9, 36–42.
- Barrasso-Catanzaro, C. (2015) *Integrating Mindfulness and Acceptance-Based Practice into the College Curriculum: Examining Receptivity in Undergraduate Students* [Doctoral Dissertation, Kean University]. ProQuest Dissertations & Theses Global.
- Beidas, R. S., Saldana, L., & Shelton, R. C. (2023). Testing psychosocial interventions in the contexts they are meant to be delivered. *Journal of Consulting and Clinical Psychology*.
- Bohlmeijer, E. T., & Westerhof, G. J. (2020). A new model for sustainable mental health: Integrating well-being into psychological treatment. In *Making an Impact on Mental Health* (pp. 153–188). Routledge.
- Boone, M., Gregg, J., & Coyne, L. (2020). *Stop Avoiding Stuff: 25 Microskills to Face Your Fears and Do It Anyway*. New Harbinger Publications.
- Boone, M. S., & Canicci, J. (2013). Acceptance and commitment therapy (ACT) in groups. In Pistorello, J. (ed), *The Context Press Mindfulness and Acceptance Practica Series. Mindfulness and Acceptance for Counseling College Students: Theory and Practical Applications for Intervention, Prevention and Outreach* (pp. 73–93). Context Press/New Harbinger Publications.
- Boone, M. S., & Myler, C. (2012). *Act for Depression and Anxiety Group. Unpublished training manual*. Available at: https://contextualscience.org/act_for_depression_and_anxiety_group_cornell_univ
- Bowen, D. J., Kreuter, M., Spring, B., Cofta-Woerpel, L., Linnan, L., Weiner, D., Bakken, S., Kaplan, C. P., Squiers, L., Fabrizio, C., & Fernandez, M. (2009). How we design feasibility studies. *American Journal of Preventive Medicine*, 36, 452–457. <https://doi.org/10.1016/j.amepre.2009.02.002>

- Brown, S., & Schiraldi, G.** (2004). Reducing subclinical symptoms of anxiety and depression: a comparison of two college courses. *American Journal of Health Education*, 35, 158–164. <https://doi.org/10.1080/19325037.2004.10603632>
- Browning, M. E., Morena, A., Gould, E. R., & Lloyd-Richardson, E. E.** (2022). Brief ACT for undergraduates: a mixed-methods pilot investigation of acceptance and commitment therapy delivered over Zoom. *Journal of College Student Psychotherapy*, ahead-of-print. <https://doi.org/10.1080/87568225.2022.2029659>
- Christodoulou, V., Flaxman, P. E., & Lloyd, J.** (2021). Acceptance and commitment therapy in group format for college students. *Journal of College Counseling*, 24, 210–223.
- Chugani, C. D., Fuhrman, B., Abebe, K. Z., Tallis, J., Miller, E. & Coulter, R. W. S.** (2020). Wellness and resilience for college and beyond: protocol for a quasi-experimental pilot study investigating a dialectical behaviour therapy skill-infused college course. *BMJ Open*, 10, 1–7. doi: [10.1136/bmjopen-2020-036833](https://doi.org/10.1136/bmjopen-2020-036833)
- Ciarrochi, J., Atkins, P., Hayes, L., Sahdra, B., & Parker, P.** (2016). Contextual positive psychology: policy recommendations for implementing positive psychology into schools. *Frontiers in Psychology*, 7, 1561. <https://doi.org/10.3389/fpsyg.2016.01561>
- Clarke, S., Kingston, J., James, K., Bolderston, H., & Remington, B.** (2014). Acceptance and commitment therapy group for treatment-resistant participants: a randomized controlled trial. *Journal of Contextual Behavioral Science*, 3, 179–188. <https://doi.org/10.1016/j.jcbs.2014.04.005>
- Clarke, S., Kingston, J., Wilson, K. G., Bolderston, H., & Remington, B.** (2012). Acceptance and commitment therapy for a heterogeneous group of treatment-resistant clients: a treatment development study. *Cognitive and Behavioral Practice*, 19, 560–572. <https://doi.org/10.1016/j.cbpra.2012.03.001>
- Cohen, J.** (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd edn). Hillsdale, NJ: Erlbaum.
- Cohen, J.** (1992). A power primer. *Psychological Bulletin*, 112, 155–159.
- Conley, C. S., Durlak, J. A., & Dickson, D. A.** (2013a). An evaluative review of outcome research on universal mental health promotion and prevention programs for higher education students. *Journal of American College Health*, 61, 286–301. <https://doi.org/10.1080/07448481.2013.802237>
- Conley, C. S., Travers, L. V., & Bryant, F. B.** (2013b). Promoting psychosocial adjustment and stress management in first-year college students: the benefits of engagement in a psychosocial wellness seminar. *Journal of American College Health*, 61, 75–86.
- Cuijpers, P.** (2021). Indirect prevention and treatment of depression: an emerging paradigm? *Clinical Psychology in Europe*, 3, 1–9.
- Danitz, S., & Orsillo, S.** (2014). The mindful way through the semester: an investigation of the effectiveness of an acceptance-based behavioral therapy program on psychological wellness in first-year students. *Behavior Modification*, 38, 549–566. <https://doi.org/10.1177/0145445513520218>
- Danitz, S., Suvak, M., & Orsillo, S.** (2016). The mindful way through the semester: evaluating the impact of integrating an acceptance-based behavioral program into a first-year experience course for undergraduates. *Behavior Therapy*, 47, 487–499. <https://doi.org/10.1016/j.beth.2016.03.002>
- DeArmond, M., & Marsh, K.** (1984). Preventive psychiatry on the college campus. *Psychiatric Annals*, 14, 671–678. <https://doi.org/10.3928/0048-5713-19840901-11>
- Dooris, M., Wills, J., & Newton, J.** (2014). Theorizing healthy settings: a critical discussion with reference to healthy universities. *Scandinavian Journal of Public Health*, 42 (15_suppl), 7–16.
- Downs, M. F., & Eisenberg, D.** (2012). Help seeking and treatment use among suicidal college students. *Journal of American College Health*, 60, 104–114. <https://doi.org/10.1080/07448481.2011.619611>
- Duffy, M. E., Twenge, J. M., & Joiner, T. E.** (2019). Trends in mood and anxiety symptoms and suicide-related outcomes among US undergraduates, 2007–2018: evidence from two national surveys. *Journal of Adolescent Health*, 65, 590–598.
- Ebert, D. D., Mortier, P., Kaelhke, F., Bruffaerts, R., Baumeister, H., Auerbach, R. P., . . . & WHO World Mental Health–International College Student Initiative collaborators** (2019). Barriers of mental health treatment utilization among first-year college students: first cross-national results from the WHO World Mental Health International College Student Initiative. *International Journal of Methods in Psychiatric Research*, 28, e1782.
- Endicott, J., Nee, J., Harrison, W., & Blumenthal, R.** (1993). Quality of Life Enjoyment and Satisfaction Questionnaire: a new measure. *Psychopharmacology Bulletin*, 29, 321–326.
- Ernestus, S. M., Fleming, C. J. E., Wenze, S. J., & Blomquist, K. K.** (2022). The future of mental health care: why we need clinical competencies for undergraduate psychology majors. *The Behavior Therapist*, 45, 232–240.
- Eustis, E. H., Williston, S. K., Morgan, L. P., Graham, J. R., Hayes-Skelton, S. A., & Roemer, L.** (2017). Development, acceptability, and effectiveness of an acceptance-based behavioral stress/anxiety management workshop for university students. *Cognitive and Behavioral Practice*, 24, 174–186. <https://doi.org/10.1016/j.cbpra.2016.03.011>
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A.** (2007). G*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175–191. <http://doi.org/10.3758/BF03193146>
- Fernandez, A., Howse, E., Rubio-Valera, M., Thorncraft, K., Noone, J., Luu, X., . . . & Salvador-Carulla, L.** (2016). Setting-based interventions to promote mental health at the university: a systematic review. *International Journal of Public Health*, 61, 797–807.
- Firestone, J., Cardaciotto, L., Levin, M., Goldbacher, E., Vernig, P., & Gambrel, L.** (2019). A web-based self-guided program to promote valued-living in college students: a pilot study. *Journal of Contextual Behavioral Science*, 12, 29–38. <https://doi.org/10.1016/j.jcbs.2019.01.004>

- Forcino, S. S., Grimes, M. L., Capriotti, M. R., & Woodhead, E. L. (2022). The clinical training timeline in terminal master's programs: challenges and solutions. *The Behavior Therapist*, *45*, 245–248.
- Gloster, A. T., Walder, N., Levin, M., Twohig, M., & Karekla, M. (2020). The empirical status of acceptance and commitment therapy: a review of meta-analyses. *Journal of Contextual Behavioral Science*, *18*, 181–192. <https://doi.org/10.1016/j.jcbs.2020.09.009>
- Gonçalves, M. M. (2023). Acceptance and commitment therapy and its unacknowledged influences: Some old wine in a new bottle? *Clinical Psychology & Psychotherapy*, *30*, 1–9.
- Goulet-Pelletier, J. C., & Cousineau, D. (2018). A review of effect sizes and their confidence intervals, Part I: The Cohen's *d* family. *Quantitative Methods for Psychology*, *14*, 242–265.
- Gusman, M. S., Grimm, K. J., Cohen, A. B., & Doane, L. D. (2021). Stress and sleep across the onset of the novel coronavirus disease 2019 pandemic: impact of distance learning on US college students' health trajectories. *Sleep*, *44*, 193. <https://doi.org/10.1093/sleep/zsab193>
- Harris, R. (2008). *The Happiness Trap: Stop Struggling, Start Living: A Guide to ACT*. Trumpeter.
- Harris, R. (2009). *ACT Made Simple Handouts and Worksheets Confirmation*. The Happiness Trap. <http://thehappinesstrap.com/the-complete-set-of-client-handouts-and-worksheets-from-act-made-simple/act-made-simple-handouts-and-worksheets-confirmation/>
- Harris, R. (2019). *Free Resources from Dr Russ Harris*. The Happiness Trap. <http://thehappinesstrap.com/free-resources/>
- Hayes, L., Ciarrochi, J., & Hayes, S. (2015). *The Thriving Adolescent: Using Acceptance and Commitment Therapy and Positive Psychology to Help Teens Manage Emotions, Achieve Goals, and Build Connection*. Context Press.
- Hayes, S., Strosahl, K., & Wilson, K. (2011). *Acceptance and Commitment Therapy, Second Edition: The Process and Practice of Mindful Change*. Guilford Publications.
- Hayes, S. C., Levin, M. E., Plumb-Villardaga, J., Villatte, J. L., & Pistorello, J. (2013a). Acceptance and commitment therapy and contextual behavioral science: examining the progress of a distinctive model of behavioral and cognitive therapy. *Behavior Therapy*, *44*, 180–198. <https://doi.org/10.1016/j.beth.2009.08.002>
- Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: model, processes and outcomes. *Behaviour Research and Therapy*, *44*, 1–25. <https://doi.org/10.1016/j.brat.2005.06.006>
- Hayes, S. C., Pistorello, J., & Levin, M. E. (2013b). Mindfulness and acceptance in college students: why it matters. In Pistorello, J. (ed), *The Context Press Mindfulness and Acceptance Practica Series. Mindfulness and Acceptance for Counseling College Students: Theory and Practical Applications for Intervention, Prevention and Outreach* (pp. 9–22). Context Press/ New Harbinger Publications.
- Hayes, S. C., & Smith, S. (2005). *Get Out of Your Mind and Into Your Life: The New Acceptance and Commitment Therapy*. New Harbinger Publications.
- Henry, J., & Crawford, J. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, *44*, 227–239. <https://doi.org/10.1348/014466505X29657>
- Howell, A. J., & Passmore, H. A. (2019). Acceptance and commitment training (ACT) as a positive psychological intervention: a systematic review and initial meta-analysis regarding ACT's role in well-being promotion among university students. *Journal of Happiness Studies*, *20*, 1995–2010.
- IBM Corporation (2021). *IBM SPSS Statistics for MacIntosh, version 28.0*. Armonk, NY: IBM.
- Kashdan, T. B., Disabato, D. J., Goodman, F. R., Doorley, J. D., & McKnight, P. E. (2020). Understanding psychological flexibility: a multimethod exploration of pursuing valued goals despite the presence of distress. *Psychological Assessment*, *32*, 829–850. <https://doi.org/10.1037/pas0000834>
- Kazdin, A. E. (2019). Annual research review: expanding mental health services through novel models of intervention delivery. *Journal of Child Psychology and Psychiatry*, *60*, 455–472. <https://doi.org/10.1177/1745691610393527>
- Kazdin, A. E. (2022). Expanding the scope, reach, and impact of evidence-based psychological treatments. *Journal of Behavior Therapy and Experimental Psychiatry*, *76*, 101744.
- Kazdin, A. E., & Blase, S. L. (2011). Rebooting psychotherapy research and practice to reduce the burden of mental illness. *Perspectives on Psychological Science*, *6*, 21–37.
- Kazdin, A. E., & Rabbitt, S. M. (2013). Novel models for delivering mental health services and reducing the burdens of mental illness. *Clinical Psychological Science*, *1*, 170–191.
- Klaic, M., Kapp, S., Hudson, P., Chapman, W., Denehy, L., Story, D., & Francis, J. J. (2022). Implementability of healthcare interventions: an overview of reviews and development of a conceptual framework. *Implementation Science*, *17*, 10.
- Klimczak, K. S., Twohig, M. P., Peacock, G. G., & Levin, M. E. (2023). Using peer-support coaching to improve adherence to online ACT self-help for college mental health: a randomized controlled trial. *Behaviour Research and Therapy*, *160*, 104228.
- Kosmas, P., & Zaphiris, P. (2018). Embodied cognition and its implications in education: an overview of recent literature. *International Journal of Educational and Pedagogical Sciences*, *12*, 971–977.
- Lipson, S. K., Talaski, A., Cesare, N., Malpiede, M., & Humphrey, D. (2021). *The Role of Faculty in Student Mental Health*. Boston University, Mary Christie Foundation and The Healthy Minds Network: Boston, MA, USA.

- Lovibond, S.H. & Lovibond, P.F. (1995). *Manual for the Depression Anxiety & Stress Scales*. (2nd edn) Psychology Foundation.
- Luoma, J. B. & Plumb, J. (2013). Improving therapist psychological flexibility while training acceptance and commitment therapy: a pilot study. *Cognitive Behaviour Therapy*, 42, 1–8. doi: [10.1080/16506073.2012.701662](https://doi.org/10.1080/16506073.2012.701662)
- Ma, L., Wang, Y., Pan, L., Cui, Z., & Schluter, P. J. (2022). Mindfulness-informed (ACT) and mindfulness-based programs (MBSR/MBCT) applied for college students to reduce symptoms of depression and anxiety. *Journal of Behavioral and Cognitive Therapy*.
- Mandracchia, J. T., & Pendleton, S. (2015). Understanding college students' problems: dysfunctional thinking, mental health, and maladaptive behavior. *Journal of College Student Retention: Research, Theory & Practice*, 17, 226–242. <https://doi.org/10.1177/1521025115578235>
- Masuda, A., Morgan, L., Spencer, S. D., Qina'au, J., & Jo, D. (2021). *Cultural Adaptations of Acceptance and Commitment Therapy*.
- McCarty, R., Cooke, D., Lazaro, L., Guzick, A., Guastello, A., Budd, S., Downing, S. T., Ordway, A. R., Mathews, C. A., & McNamara, J. (2022). The effects of an exposure therapy training program for pre-professionals in an intensive exposure-based summer camp. *the Cognitive Behaviour Therapist*, 15, E5. <https://doi.org/10.1017/S1754470X22000010>
- Mullen, R. A., Tracy, P., Block-Lerner, J., Marks, D., Sandoz, E., & Ricardo, P. (2021). Curriculum-based yoga and acceptance and commitment training intervention for undergraduate students: mixed-methods investigation. *Journal of Contextual Behavioral Science*, 19, 92–99. <https://doi.org/10.1016/j.jcbs.2020.12.005>
- O'Neill, L., Latchford, G., McCracken, L. M., & Graham, C. D. (2019). The development of the Acceptance and Commitment Therapy Fidelity Measure (ACT-FM): a Delphi study and field test. *Journal of Contextual Behavioral Science*, 14, 111–118.
- Oliver, J. (2011). *The Unwelcome Party Guest: An Acceptance and Commitment Therapy Metaphor* [video]. YouTube. <https://www.youtube.com/watch?v=VYht-guymF4>
- Ong, C. W., Sheehan, K. G., & Haaga, D. A. (2023). Measuring ACT in context: Challenges and future directions. *Journal of Contextual Behavioral Science*.
- Osman, A., Wong, J., Bagge, C., Freedenthal, S., Gutierrez, P., & Lozano, G. (2012). The Depression Anxiety Stress Scales-21 (DASS-21): further examination of dimensions, scale reliability, and correlates: depression anxiety stress. *Journal of Clinical Psychology*, 68, 1322–1338. <https://doi.org/10.1002/jclp.21908>
- Petersen, J. M., Davis, C. H., Renshaw, T. L., Levin, M. E., & Twohig, M. P. (2022). School-based acceptance and commitment therapy for adolescents with anxiety: a pilot trial. *Cognitive and Behavioral Practice*.
- Pistorello, J., Hayes, S. C., Lillis, J., Long, D. M., Christodoulou, V., Lejeune, J., Villatte, J., Seeley, J., Villatte, M., Jeffcoat, T., Plumb-Villardaga, J., & Yadaiva, J. (2013). Acceptance and commitment therapy (ACT) in classroom settings. In Pistorello, J. (ed), *The Context Press Mindfulness and Acceptance Practica Series. Mindfulness and Acceptance for Counseling College Students: Theory and Practical Applications for Intervention, Prevention and Outreach* (pp. 223–250). Context Press/New Harbinger Publications.
- Pistorello, J., Hayes, S. C., Seeley, J., Biglan, T., Long, D. M., Levin, M. E., Kosty, D., Lillis, J., Villatte, J., MacLane, C., Villardaga, R., Daflos, S., Hammonds, S., Locklear, A. & Hanna, E. (2016). ACT-based first year experience seminars. In Block-Lerner, J., & Cardaciotto, L. (eds), *The Mindfulness-Informed Educator: Building Acceptance & Psychological Flexibility in Higher Education* (pp. 101–120) Routledge. <https://doi.org/10.4324/9781315795584-16>
- Räsänen, P., Lappalainen, P., Muotka, J., Tolvanen, A., & Lappalainen, R. (2016). An online guided ACT intervention for enhancing the psychological wellbeing of university students: a randomized controlled clinical trial. *Behaviour Research and Therapy*, 78, 30–42. <https://doi.org/10.1016/j.brat.2016.01.001>
- Regehr, C., Glancy, D., & Pitts, A. (2012). Interventions to reduce stress in university students: a review and meta-analysis. *Journal of Affective Disorders*, 148, 1–11. <https://doi.org/10.1016/j.jad.2012.11.026>
- Renshaw, T. L., Weeks, S. N., Roberson, A. J., & Vinal, S. (2022). ACT in Schools: A Public Health Approach.
- Riendeau, R. P., Sullivan, J. L., Meterko, M., Stolzmann, K., Williamson, A. K., Miller, C. J., Kim, B., & Bauer, M. S. (2018). Factor structure of the Q-LES-Q short form in an enrolled mental health clinic population. *Quality of Life Research*, 27, 2953–2964. <https://doi.org/10.1007/s11136-018-1963-8>
- Rogge, R. D., & Daks, J. S. (2021). Embracing the intricacies of the path toward mindfulness: broadening our conceptualization of the process of cultivating mindfulness in day-to-day life by developing the unified flexibility and mindfulness model. *Mindfulness*, 12, 701–721. <https://doi.org/10.1007/s12671-020-01537-w>
- Rolfs, J. L., Rogge, R. D., & Wilson, K. G. (2016). Disentangling components of flexibility via the hexaflex model development and validation of the Multidimensional Psychological Flexibility Inventory (MPFI). *Assessment*, 25, 458–482. <https://doi.org/10.1177/1073191116645905>
- Schiraldi, G., & Brown, S. (2001). Primary prevention for mental health: results of an exploratory cognitive-behavioral college course. *Journal of Primary Prevention*, 22, 55–67. <https://doi.org/10.1023/A:1011040231249>
- Schiraldi, G., Spalding, T., & Hofford, C. (1998). Expanding health educators' roles to meet critical needs in stress management and mental health. *Journal of Health Education*, 29, 68–76. <https://doi.org/10.1080/10556699.1998.10603308>

- Schleider, J. L., Sung, J. Y., Bianco, A., Gonzalez, A., Vivian, D., & Mullarkey, M. C. (2021). Open pilot trial of a single-session consultation service for clients on psychotherapy wait-lists. *The Behavior Therapist*, 44, 8–15.
- Sekhon, M., Cartwright, M., & Francis, J. J. (2017). Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework. *BMC Health Services Research*, 17, 1–13.
- Sekhon, M., Cartwright, M., & Francis, J. J. (2022). Development of a theory-informed questionnaire to assess the acceptability of healthcare interventions. *BMC health services research*, 22, 279.
- Shim, M., Mahaffey, B., Bleidistel, M., & Gonzalez, A. (2017). A scoping review of human-support factors in the context of internet-based psychological interventions (IPIs) for depression and anxiety disorders. *Clinical Psychology Review*, 57, 129–140. <https://doi.org/10.1016/j.cpr.2017.09.003>
- Stafford-Brown, J., & Pakenham, K. (2012). The effectiveness of an ACT informed intervention for managing stress and improving therapist qualities in clinical psychology trainees. *Journal of Clinical Psychology*, 68, 592–513. <https://doi.org/10.1002/jclp.21844>
- Stenhoff, A., Steadman, L., Nevitt, S., Benson, L., & White, R. G. (2020). Acceptance and commitment therapy and subjective wellbeing: a systematic review and meta-analyses of randomised controlled trials in adults. *Journal of Contextual Behavioral Science*, 18, 256–272
- Strosahl, K. D., Robinson, P. J., & Gustavsson, T. (2012). *Brief Interventions for Radical Change: Principles and Practice of Focused Acceptance and Commitment Therapy*. New Harbinger Publications.
- Tift, E. D., Underwood, S. B., Roberts, M. Z., & Forsyth, J. P. (2022). Using meditation in a control vs. acceptance context: a preliminary evaluation of relations with anxiety, depression, and indices of well-being. *Journal of Clinical Psychology*. <https://doi.org/10.1002/jclp.23313>
- University College Dublin (2021). *Passengers on the Bus: Choose Your Own Adventure Video Series* [video]. YouTube. <https://www.youtube.com/watch?v=huVc6SphzC0>
- University of Massachusetts Dartmouth. (n.d.). Data reports. Institutional Research and Assessment | UMass Dartmouth. <https://www.umassd.edu/oir/institutional-research/data-reports/>
- Vidourek, R. A., King, K. A., Nabors, L. A., & Merianos, A. L. (2014). Students' benefits and barriers to mental health help-seeking. *Health Psychology and Behavioral Medicine*, 2, 1009–1022. <https://doi.org/10.1080/21642850.2014.963586>
- Viskovich, S., & Pakenham, K. I. (2020). Randomized controlled trial of a web-based acceptance and commitment therapy (ACT) program to promote mental health in university students. *Journal of Clinical Psychology*, 76, 929–951.
- Viskovich, S., Pakenham, K. I., & Fowler, J. A. (2021). A mixed-methods evaluation of experiential intervention exercises for values and committed action from an acceptance and commitment therapy (ACT) mental health promotion program for university students. *Journal of Contextual Behavioral Science*, 22, 108–118.
- White, R. G., Gregg, J., Batten, S., Hayes, L. L., & Kasujja, R. (2017). Contextual behavioral science and global mental health: synergies and opportunities. *Journal of Contextual Behavioral Science*, 6, 245–251.
- White House (2023). *White House Report on Mental Health Research Priorities*. Washington, DC.
- Williams, A. J., Botanov, Y., Giovanetti, A. K., Perko, V. L., Sutherland, C. L., Youngren, W., & Sakaluk, J. K. (2022). A metascientific review of the evidential value of acceptance and commitment therapy for depression. *Behavior Therapy*.
- Woidneck, M., Pratt, K., Gundy, J., Nelson, C., & Twohig, M. (2012). Exploring cultural competence in acceptance and commitment therapy outcomes. *Professional Psychology, Research and Practice*, 43, 227–233. <https://doi.org/10.1037/a002623>
- World Health Organization (2022). World mental health report: transforming mental health for all: executive summary. <https://apps.who.int/iris/handle/10665/356115>.
- World Health Organization (n.d.). SDG target 3.4 Non-communicable diseases and mental health. World Health Organization. Available at: https://www.who.int/data/gho/data/themes/topics/sdg-target-3_4-noncommunicable-diseases-and-mental-health (accessed 15 November 2022).
- Worsley, J. D., Pennington, A., & Corcoran, R. (2022). Supporting mental health and wellbeing of university and college students: a systematic review of review-level evidence of interventions. *PLoS One*, 17, e0266725.
- Zancan, R. K., Constantinopolos, L. B., Pankowski, B. E., Bellini, B. D., & da Silva Oliveira, M. (2023). Acceptance and commitment therapy for university students: a qualitative study. *Psicologia: Teoria, e Prática*, 25, ePTPPE14535.

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