

Development of a Single-Session, Transdiagnostic Preventive Intervention for Young Adults at Risk for Emotional Disorders

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Abstract

Cognitive-behavioral prevention programs have demonstrated efficacy in reducing subclinical symptoms of anxiety and depression, and there is some evidence to suggest that they can lower the risk of future disorder onset. However, existing interventions tend to be relatively lengthy and target specific disorders or problem areas, both of which limit their potential for widespread dissemination. To address these limitations, we aimed to develop a single-session, transdiagnostic preventive intervention based on the Unified Protocol for Transdiagnostic Treatment of Emotional Disorders for young adults at risk for developing anxiety and/or depressive disorders within a college setting. Results from this proof-of-concept study indicated that the intervention was

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viewed as highly satisfactory and acceptable. The intervention also was successful at delivering adaptive emotion management skills in its 2-hr workshop format. Future studies evaluating the efficacy of this novel transdiagnostic, emotion-focused prevention program are warranted.

Keywords

prevention, transdiagnostic, anxiety, depression, young adults, college

Anxiety and depressive disorders are the most common psychiatric disorders, with adult lifetime prevalence rates in the United States of 33.7% and 21.4%, respectively (Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012). These disorders are associated with high comorbidity (e.g., Brown, Campbell, Lehman, Grishan, & Mancill, 2001), mortality (e.g., Walker, McGee, & Druss, 2015), and direct and indirect costs (Kessler, 2012; Konnopka, Leichsenring, Leibing, & Konig, 2009). The delay in seeking mental health treatment following the onset of anxiety and depressive disorders is also long (e.g., median delay between 3 and 30 years for anxiety and between 1 and 14 years for depression; Wang et al., 2007). The need for interventions that prevent these disorders from fully emerging has been increasingly recognized (National Research Council & Institute of Medicine, 2009). Indeed, one of the four priority areas in the current National Institute of Mental Health (NIMH; 2015) Strategic Plan for Research is to develop effective preventive interventions for these common mental illnesses.

Accordingly, there has recently been a proliferation of studies evaluating the effects of universal (i.e., no selection criteria), selective (i.e., presence of risk factors), and indicated (i.e., presence of subclinical symptoms) interventions for anxiety and depression across school, community, and clinical settings (e.g., Bennett et al., 2016). This research suggests that extant prevention programs generally have efficacy in reducing subclinical symptoms or vulnerability factors (e.g., Feldner, Zvolensky, & Schmidt, 2004; Fisak, Richard, & Mann, 2011; Stockings et al., 2016). In some cases, interventions have also been shown to decrease incidence of disorder onset (e.g., Brent et al., 2015; Gardenswartz & Craske, 2001; Gillham, Hamilton, Freres, Patton, & Gallop, 2006). Despite promising results overall, existing prevention efforts have had relatively limited large-scale impact for several important reasons.

Limitations of Existing Prevention Programs

First, most evidence-based preventive interventions tend to be closely based on cognitive-behavioral treatment (CBT) or mindfulness paradigms that are

lengthy and resource intensive (e.g., Dvořáková et al., 2017; Pistorello et al., 2012; Vázquez et al., 2012). For example, in one meta-analytic review of anxiety prevention programs by Fisak and colleagues (2011), the average intervention length was between 8 and 12 sessions, which approaches the length of most evidence-based CBT protocols for anxiety disorders. Despite this, meta-analyses of prevention efforts have generally not observed longer programs to be associated with improved outcomes (e.g., Christensen, Pallister, Smale, Hickie, & Callear, 2010; Fisak et al., 2011; Stockings et al., 2016), and in fact, one meta-analysis found *shorter* programs to have more powerful effects (Stice, Shaw, Bohon, Marti, & Rohde, 2009). These findings suggest that briefer interventions, which require fewer resources and have the potential to be more easily accessible and viewed as more satisfactory by both participants and facilitators, may be at least as effective as longer, more intensive programs. Indeed, several *single-session* interventions have shown positive results in reducing anxiety and/or depressive symptoms among adolescents and young adults to date (e.g., Danitz, Suvak, & Orsillo, 2016; Keough & Schmidt, 2012; Schmidt et al., 2007).

Second, many existing preventive interventions target *specific disorders or problem areas*, such as individual anxiety disorders or unipolar depression (e.g., Aune & Stiles, 2009 [social anxiety disorder]; Beardslee et al., 2013 [depression]; Gardenswartz & Craske, 2001 [panic disorder]; Gillham et al., 2006 [depression]; Stallard et al., 2006 [posttraumatic stress disorder, PTSD]). This specificity means that more than one intervention must be delivered to address risk for both conditions. Additional programs are then required to address other comorbid problems, such as substance use and eating disorders (Feldner et al., 2004). The approach of delivering multiple preventive interventions, each targeting distinct risk factors or symptom sets, is costly and time-intensive for participants and facilitators alike, both of which are important barriers to widespread dissemination and implementation of these programs. The advantages of programs that simultaneously address a broader number of commonly co-occurring disorders have been increasingly recognized, as evidenced by the growing number of interventions targeting both anxiety and depression developed and tested within the past decade (e.g., Barrett, Farrell, Ollendick, & Dadds, 2006; Bettis et al., 2017; Dvořáková et al., 2017; Musiat et al., 2014; Seligman, Schulman, & Tryon, 2007).

Third, and with some exceptions (e.g., Danitz et al., 2016; Keough & Schmidt, 2012), prevention research has largely focused on *children and early adolescents* to align with the developmental periods in which the risk for disorder onset increases (Bennett et al., 2016). As a result, other populations associated with elevated risk of anxiety and depression have received notably less emphasis. One age group that warrants greater attention is young adults, who face developmental and social stressors associated with

transitioning roles, responsibilities, and life situations (e.g., Arnett, 2000), and are at elevated risk of anxiety and depressive disorder onset (e.g., Kessler et al., 2005). Among college students specifically, anxiety and depression are associated with engagement in problematic risky behaviors (e.g., Potter, Gailbraith, Jensen, Morrison, & Heimberg, 2016), eating disorders (e.g., Eisenberg, Nicklett, Roeder, & Kirz, 2011), poorer academic achievement, and lower graduation rates (American College Health Association, 2011).

Unfortunately, rates of anxiety, depression, and related sequelae (e.g., suicidal ideation) have *increased* on college campuses in recent years (e.g., Center for Collegiate Mental Health [CCMH], 2016). From 2010 to 2015, the percentage of college students reporting anxiety as their main reason for seeking treatment rose from 41% to 47% (for depression, 37%-40%; Barr, Rando, Krylowicz, & Reetz, 2010; Reetz, Krylowicz, Bershada, Lawrence, & Mistler, 2015), whereas other types of self-reported distress (e.g., substance use, eating concerns, academic stress) have remained stable or decreased (CCMH, 2016). Furthermore, one report indicated that during the past 6 years, the number of students seeking treatment at their College Counseling Center (CCC) grew by 30% and over 5 times the rate of institutional enrollment, reflecting a marked increase in demand for services that is difficult for universities to accommodate (CCMH, 2016). Taken together, there is an urgent need for novel, transdiagnostic interventions that protect against the development of anxiety, depression, and related conditions among college students and can be easily integrated into university settings (e.g., Danitz & Orsillo, 2014).

A Unified, Transdiagnostic Approach to Prevention

The Unified Protocol for Transdiagnostic Treatment of Emotional Disorders (UP; Barlow et al., 2011) is a cognitive-behavioral intervention that was designed to directly address neuroticism, a core temperamental vulnerability for anxiety and depressive disorders. Defined as the tendency to experience frequent and intense emotions in response to stress, accompanied by perceptions of inadequate coping ability (Barlow, Sauer-Zavala, Carl, Bullis, & Ellard, 2014), neuroticism has been shown to predict anxiety and unipolar depressive disorders, as well as other conditions characterized by exaggerated negative emotionality (e.g., PTSD, substance use disorders, eating disorders). The UP targets neuroticism through six core treatment modules, each of which is aimed to replace maladaptive, avoidant reactions to intense emotion with adaptive emotion coping strategies.

The UP has shown efficacy in treating anxiety in multiple trials to date (e.g., Farchione et al., 2012), including a recent, large randomized controlled

equivalence trial ($N = 223$), in which the transdiagnostic UP was shown to be as effective as well-established, diagnosis-specific approaches for anxiety disorders (Barlow et al., in press). There is also initial evidence to support the efficacy of the UP (or its core treatment components) in treating unipolar and bipolar depression (e.g., Boswell, Anderson, & Barlow, 2014; Ellard, Deckersbach, Sylvia, Nierenberg, & Barlow, 2012), PTSD (M. W. Gallagher, 2017), borderline personality disorder (Sauer-Zavala, Bentley, & Wilner, 2016), nonsuicidal self-injury (Bentley, Nock, Sauer-Zavala, Gorman, & Barlow, 2017), alcohol use (Ciraulo et al., 2013; Farchione, Goodness, & Williams, 2017), and eating disorders (Thompson-Brenner et al., 2018). The UP has also been shown to facilitate change in levels of neuroticism among outpatients with anxiety disorders (Carl, Gallagher, Sauer-Zavala, Bentley, & Barlow, 2014).

Adapting the UP into a brief, low-intensity preventive intervention may help address some of the aforementioned limitations of existing programs. First, the strategy of targeting transdiagnostic vulnerabilities reduces the number of programs that must be designed, evaluated, and implemented. Thus, this approach may be more cost-effective and efficient than delivering and training providers in multiple problem-specific interventions. Furthermore, by addressing underlying mechanisms of dysfunction rather than disorder-specific symptoms, transdiagnostic interventions have the potential to lead to more durable, broad-based effects than their diagnosis-specific counterparts. Transdiagnostic, mechanism-based interventions are also well suited for prevention efforts given the need to target problems with emotion regulation and other risk factors so that psychopathology does not fully develop, rather than reducing clinical-level disorders (Gross & Jazaieri, 2014; Zalta & Shankman, 2016). It is important to note that several other single-session, mechanism-based programs have been developed and tested to date (e.g., Danitz et al., 2016; Schmidt et al., 2007); however, these interventions tend to focus on targeting established, transdiagnostic risk factors (e.g., anxiety sensitivity) with *one* primary intervention strategy (e.g., interoceptive exposure; Keough & Schmidt, 2012). In contrast, a UP-informed intervention that teaches *multiple* key cognitive-behavioral skills for adaptive management of the full range of emotional experiences (i.e., functional assessment of emotion, mindful emotion awareness, cognitive reappraisal/flexibility, acting alternatively to avoidance) may be viewed as more acceptable to and have an impact on a broader audience, as if one concept or strategy does not resonate with a given participant, another might.

A brief intervention that teaches a number of key, transdiagnostic strategies for coping with emotion may also help meet the specific needs of CCCs, which are increasingly tasked with providing services for large numbers of

anxious and depressed young adults, despite typically being designed for only short-term treatment and possessing limited resources (CCMH, 2016; R. P. Gallagher, 2011; Kirsch, Doerfler, & Truong, 2015). One potential solution might be to offer a single-session, skills-based UP group to students who present with elevated levels of anxiety or depression (in the absence of acute safety concerns). This could give students an option to receive services while on a waitlist for individual treatment *and* allow other individuals at higher risk of self-injurious behavior to be prioritized for immediate, more intensive treatment. For some, attending this brief, skills-based intervention might result in sufficient gains, whereas those who benefit less could be stepped up to receive more tailored individual treatment.

Furthermore, CCCs often depend on trainees as clinicians (Minami et al., 2009), which can pose challenges with regard to training, including relatively short clinician durations at the CCC and necessity for time-intensive supervision. As previously stated, one advantage of transdiagnostic interventions is that clinicians can receive training in an approach that is applicable across a wide range of mental health problems in college students. It might be feasible for only a few CCC staff members to be trained to competently deliver a brief, group-based preventive intervention. These individuals could then teach rotating trainees how to teach the content and provide ongoing consultation as needed. Such a “train the trainer” model might even be extended to other students selected by faculty members and/or their peers, who might be trained as facilitators of the intervention in settings outside the CCC, such as dormitories and fraternities/sororities.

Study Aims

Based on the need for improved prevention efforts in college settings and limitations of existing programs, we set out to develop a novel preventive intervention for emotional disorders based on the empirically supported UP and conduct a preliminary examination of its acceptability and feasibility. Our approach differs from other existing evidence-based programs by harnessing four key features within a single intervention: one-session format, focus on young adults, delivery four core skills for emotion management (rather than emphasizing only one or two intervention strategies), and transdiagnostic nature applicable to the range of emotional disorders and, potentially, other functionally similar problems. In this initial proof-of-concept study, our primary aim was to whether the intervention demonstrated acceptability and feasibility. We also aimed to explore changes in anxiety and depressive symptoms, temperament, quality of life, and emotion regulation (compared with a control condition) at 1-month follow-up (1MFU).

Method

Participants

Participants were undergraduate students seeking research participation credits as part of an introductory psychology course. Eligibility criteria were inclusive and consisted of the following: (a) age 18 or older, and (b) report of elevated, subclinical symptoms of anxiety or depression during the past week. Individuals were excluded for report of clinical symptoms of either anxiety or depression during the past week. If at any point in the screening process eligible participants contacted the investigators to request immediate clinical care and/or report imminent suicide risk, they were also excluded from further participation.

The average age of all randomized participants was 18.25 ($SD = 0.90$). The majority were female (75.4%) and in their freshman year (69.6%). Of those participants who chose to provide data regarding race/ethnicity, the largest proportion of participants identified as White/Caucasian (47.1%), with smaller numbers identifying as Asian/Pacific Islander (39.9%), Black/African American (2.9%), American Indian/Alaskan Native (1.4%), and Other (4.3%). A total of 12 participants (8.7%) identified as Hispanic.¹ No demographic characteristics differed between the two conditions or the two waves of enrollment (see the “Procedure” section) at baseline, with one exception; undergraduates enrolled during the fall 2014 semester were slightly older than those enrolled during the spring 2015 semester ($M = 18.51$ [$SD = 0.84$] vs. $M = 19.00$ [$SD = 1.17$]; $p < .05$).

Procedure

All procedures were approved by the Boston University Institutional Review Board. Recruitment occurred in two waves (Wave 1 in the fall 2014 semester and Wave 2 in the spring 2015 semester). Students who expressed interest in participating in a study evaluating a new “emotion management” workshop were emailed a link via a secure Internet-based survey platform to provide informed consent and complete a screening questionnaire (see the “Measures” section). Eligible participants were routed to a message indicating their eligibility and an online battery of self-report questionnaires in the same sitting. Following completion of this baseline assessment, participants were randomized in equal numbers to either a workshop or assessment-only condition. Participants in the intervention condition provided their availability for attending the workshop via an online survey; all workshops occurred within 2 to 8 weeks of the baseline assessment. Students randomized to the

assessment-only condition were given the option to attend the workshop following their study completion. Workshop participants were given the opportunity to opt out of receiving email reminders to practice the strategies presented during the workshop. Those who did not opt out received these reminders via email every 2 weeks for the next 3 months, as well as a link to a website that provided extra copies of workshop handouts that students could download for future use. Participants in both conditions were then contacted 6 to 8 weeks after the initial baseline assessment via email to complete a web-based IMFU assessment.

Intervention

The study intervention was developed over a period of about 6 months by a team of advanced doctoral students and research faculty with formal training and certification in the UP. The workshop was delivered by up to three leaders, all either advanced doctoral students or research faculty who had participated in its development. The goal of the intervention (a single, 2-hr workshop) was to provide participants with skills to respond adaptively to emotional experience to reduce vulnerability for developing an emotional disorder. The workshop, which consisted of PowerPoint slides, didactic verbal material, media clips, and interactive discussion, included four treatment modules distilled from the full UP treatment that is typically delivered over 12 to 16 sessions. The modules included (a) functional nature of emotions, (b) mindful emotion awareness, (c) cognitive flexibility, and (d) emotion avoidance and alternative action.

Module 1 provided psychoeducation on how emotions can be functional and introduced students to the interaction of physiological, cognitive, and behavioral components during an emotional experience. In Module 2, students learned why practicing present-focused, nonjudgmental awareness can facilitate adaptive responding to emotion. Module 3 explained how the way we think about a situation influences the way we experience it and provided strategies for generating flexible, alternative appraisals in response to negative automatic thoughts. Module 4 focused on the utility of developing alternative action tendencies to counter maladaptive avoidance and emotion-driven behaviors (EDBs) during emotional experiences. Each module consisted of an experiential practice exercise (i.e., breaking down an emotion into thoughts, physical feelings, and behaviors [Module 1], engaging in a brief emotion mindfulness exercise [Module 2], generating alternative interpretations of ambiguous situations in small groups [Module 3], and brainstorming alternative actions to avoidance [Module 4]) and utilized examples relevant to undergraduate students (e.g., academic pressures, procrastinating

assignments, missing friends from home, comparisons on social media). Students were given a packet that provided a “takeaway message” and practice exercise corresponding to each module.

Based on feedback provided by attendees and leaders during the fall 2014 semester workshops, several minor modifications were made to the workshop content prior to the spring 2015 semester. These changes consisted of adding several relevant media clips and summary slides, as well as simplifying the cognitive reappraisal module. During Wave 2 workshops only, group leaders rated adherence to each module to ensure that key content was covered.

Measures

Screening. To determine eligibility for the study, a 21-item version of the Depression Anxiety Stress Scales (DASS-21; Lovibond & Lovibond, 1995) was used to assess symptoms of depression, anxiety, and stress during the past week. Scores ranging from 5 to 10 on the Depression subscale (DASS-D; indicative of mild to moderate, subclinical depression symptoms) or 4 to 7 on the Anxiety subscale (DASS-A; indicative of mild to moderate, subclinical anxiety symptoms) indicated study eligibility; students were only required to demonstrate subclinical elevations on one of these two scales. Those who endorsed clinical levels of either anxiety or depression (>10 on the DASS-D or >7 on the DASS-A) were not eligible. The DASS-21 (which includes a third subscale assessing Stress, DASS-S) was also readministered at 1MFU.

Baseline. Eligible participants completed a baseline assessment battery that consisted of measures of temperamental vulnerabilities associated with the development and maintenance of anxiety and depressive disorders, quality of life, and emotion regulation strategies. Specifically, the Neuroticism and Extraversion subscales of the NEO Five-Factor Inventory (NFFI-N/E; Costa & McCrae, 1992); the Behavioral Inhibition and Behavioral Activation Scales, Behavioral Activation Subscale (BAS; Carver & White, 1994); the Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q; Endicott, Nee, Harrison, & Blumenthal, 1993); the Multidimensional Experiential Avoidance Questionnaire (MEAQ; Gamez, Chmielewski, Kotov, Ruggero, & Watson, 2011); and the Emotion Regulation Questionnaire–Reappraisal subscale (ERQ-R; Gross & John, 2003) were administered. Participants also completed a brief demographic questionnaire that collected information on age, sex, race/ethnicity, and academic year.

Post workshop. Participants who attended the workshop completed several measures immediately after the workshop. Skill acquisition was assessed with 15 true or false questions created for the study about workshop content (e.g., “The goal of this workshop is to learn how to eliminate unwanted emotions like fear, anxiety, and sadness”). Workshop attendees also completed a feedback form that asked them to rate the acceptability and their satisfaction with the intervention at the conclusion of the workshop; quantitative ratings were adapted from Borkovec and Nau’s (1972) commonly used treatment credibility measure. The feedback form also asked participants to share their overall impressions, most and least helpful elements, and recommendations for improving the workshop.

1MFU. Participants in both conditions completed the measures of anxiety and depressive symptoms, temperamental constructs, quality of life, and emotion regulation strategies initially administered at baseline at 1MFU. Skill utilization was also assessed among workshop attendees using a 7-point Likert-type scale (1 = “never” to 7 = “all of the time”) that reflected the frequency with which participants implemented skills taught in the workshop (e.g., “I have made an effort to do something different, or act opposite, when I feel like avoiding an uncomfortable situation or emotion”) over the past month.

Data Analysis

To assess workshop acceptability, participants’ satisfaction and acceptability ratings, as well as qualitative feedback, were examined. Rates of workshop attendance, adherence, and skill acquisition were examined to determine feasibility of the workshop. Skill utilization at 1MFU was used as another indicator of feasibility. Independent-samples *t* tests were used to first examine whether baseline scores on indicators of symptoms, temperament, quality of life, and emotion regulation strategies differed between any of the following groups: (a) participants recruited during Waves 1 and 2, (b) participants randomized to the workshop and those randomized to the assessment-only condition, (c) participants randomized to the workshop condition who attended a workshop and those who did not attend a workshop, and (d) participants who completed the 1MFU and those who were lost to follow-up. Standardized mean gain effect sizes (ESsg; Lipsey & Wilson, 2001), which correct for the association between two assessments due to repeated measurement and thus are appropriate for intraindividual change, were computed to explore changes in symptoms, quality of life, emotion regulation, and temperament from baseline to 1MFU for workshop attendees. ESsg can be interpreted similarly to Cohen’s *d*, with 0.2 representing a small effect, 0.5 a medium effect, and

0.8 a large effect (Cohen, 1988). Hedges's g effect size estimates, which include a correction for small sample sizes, were also computed to examine differences in IMFU scores for workshop attendees compared with those in the assessment-only condition.

Results

Participant Flow

The flow of participants is presented in Figure 1. A total of 350 students provided informed consent and completed the screening questionnaire. Of these, 138 (39.4%) were eligible and subsequently randomized to either the workshop condition ($n = 68$) or assessment-only condition ($n = 70$). In total, 45 participants attended a workshop, of which 36 (80.0%) completed the IMFU. Of the 70 participants randomized to the assessment-only condition, 35 (50.0%) completed the IMFU. There were no differences in demographic characteristics between participants who completed the IMFU and those who did not.

Acceptability and Feasibility

Four workshops were conducted during Wave 1 and three workshops during Wave 2. The mean number of attendees per workshop was 6.4 (Wave 1 range = 7-11, Wave 2 range = 2-3). Feedback on the workshop ($n = 45$) was very favorable overall. Participants rated the workshops as highly acceptable on average ($M = 4.2$ [$SD = 0.74$] on a scale from 1 = "not at all acceptable" to 5 = "extremely acceptable"), with 82% of participants rating the workshop content as "very acceptable" or "extremely acceptable" (see Figure 2). Participants reported high satisfaction with workshop content ($M = 3.98$ [$SD = 0.84$] on a scale from 1 = "not at all satisfied" to 5 = "extremely satisfied"); specifically, 69% indicated that they were "very satisfied" or "extremely satisfied" (see Figure 2). Of qualitative feedback provided, most comments (82%) were positive (e.g., "excellent, really clear, and helpful"). Other comments (11%) were neutral or mixed (e.g., "learned a lot [but] could have been more engaging"), and 7% of the comments were negative (e.g., "slightly repetitive and common knowledge"). Participants also demonstrated a good understanding of workshop material based on the measure of skill acquisition. The modal accuracy rate was 100%, with all but two questions having accuracy rates above 80%.

With regard to feasibility, the majority of participants randomized to the workshop condition attended a workshop (66.2%). Adherence for all rated workshops was 100%. Approximately 40% of workshop participants accessed electronic copies of workshop materials after the workshop. In addition, 50%

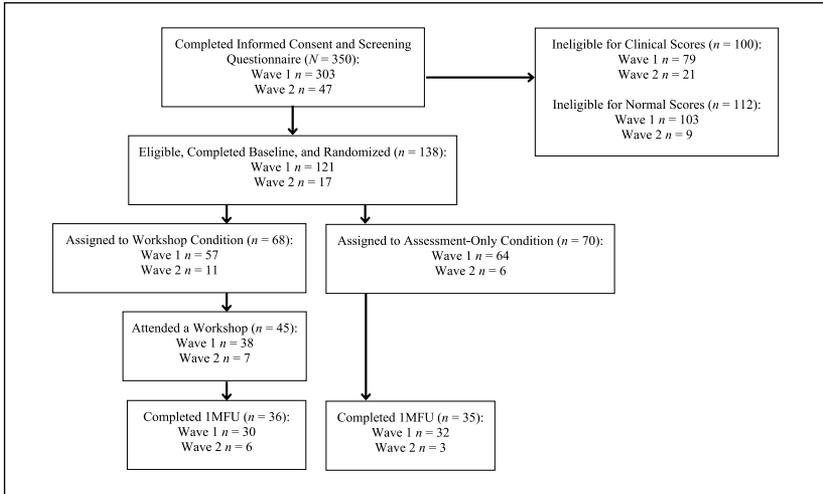


Figure 1. Flow of participants in study.

Note. Six participants ($n = 6$) who were randomized to the workshop condition but did not attend a workshop also completed the IMFU; these individuals are not reflected in the IMFU n s above as they were excluded from all analyses. IMFU = 1-month follow-up.

of participants elected to receive reminders via email to continue practice of skills. At IMFU, participants indicated that, on average, they used workshop skills to manage emotional experiences between “some of the time” and “most of the time.” No significant relationships between skills use and outcomes were observed. Receipt of reminders to practice concepts learned during the workshop did not have an effect on self-reported skill use.

Outcomes

Table 1 presents descriptive statistics for symptoms, temperament, quality of life, and emotion regulation indices by condition at baseline and IMFU. Independent-samples t tests indicated that baseline scores did not differ by wave, which justified combining the two waves for our analyses. There were also no between-condition baseline differences on the DASS-D, DASS-A, NFFI-N/E, BAS, Q-LES-Q, MEAQ, or ERQ-R. There was, however, a significant difference on the DASS-S, $t(136) = 2.01, p < .05$, with assessment-only participants evidencing higher stress levels than those in the workshop condition; however, baseline DASS-S scores still fell in the subclinical range for both groups. Baseline scores also did not differ

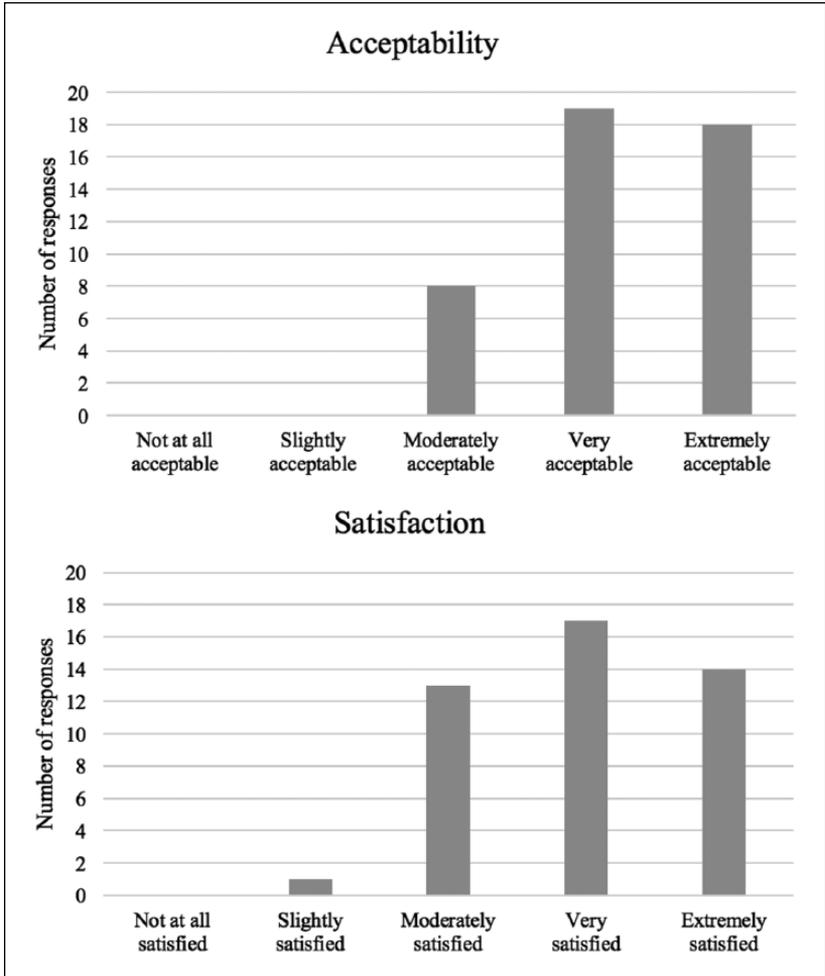


Figure 2. Workshop attendees' acceptability and satisfaction ratings ($n = 45$).

between participants in the workshop condition who attended a workshop and those who did not, or participants who completed the 1MFU and those who did not. This suggests that dropout was most likely not due to severity of psychopathology or related constructs (e.g., avoidance); thus, we proceeded to compute effect sizes using data from participants who completed the 1MFU.

Table 1. Descriptive Data and Effect Sizes for Self-Report Questionnaires.

Measure	Workshop		Assessment-only		Hedges's <i>g</i> (95% CI): IMFU	
	Baseline	IMFU	ES _g (95% CI): Baseline to IMFU	Baseline		IMFU
DASS-D	5.07 (2.56)	4.67 (4.22)	-0.23 [-0.59, 0.14]	4.97 (2.62)	5.94 (3.83)	-0.31 [-0.78, 0.16]
DASS-A	4.72 (1.65)	4.25 (4.05)	-0.20 [-0.59, 0.20]	4.83 (1.45)	5.00 (3.39)	-0.20 [-0.66, 0.27]
DASS-S	7.04 (2.39)	6.75 (4.07)	-0.21 [-0.58, 0.16]	7.93 (2.76)	7.71 (3.20)	-0.26 [-0.73, 0.21]
NFFI-N	38.05 (7.74)	35.11 (7.67)	-0.34* [-0.67, -0.02]	36.67 (7.25)	36.74 (6.17)	-0.23 [-0.70, 0.24]
NFFI-E	39.83 (6.81)	40.50 (7.02)	0.08 [-0.17, 0.32]	40.19 (6.79)	40.20 (5.77)	0.05 [-0.42, 0.51]
BAS	28.12 (4.57)	28.58 (6.21)	0.08 [-0.21, 0.38]	28.60 (4.97)	28.80 (5.17)	-0.04 [-0.50, 0.43]
Q-LES-Q	51.16 (7.43)	53.64 (8.04)	0.39* [0.09, 0.70]	51.66 (6.82)	49.57 (7.05)	0.53* [0.06, 1.01]
MEAQ	198.57 (30.07)	190.82 (30.87)	-0.42* [-0.75, -0.10]	201.43 (36.72)	197.57 (33.36)	-0.21 [-0.67, 0.26]
ERQ-R	30.85 (5.56)	31.83 (5.18)	0.05 [-0.31, 0.40]	30.23 (6.38)	30.43 (5.55)	0.26 [-0.21, 0.73]

Note. Unless otherwise noted, values refer to means and standard deviations, *M* (*SD*). Standardized mean gain effect sizes (ES_g) indicates change from baseline to IMFU for participants in the workshop condition only. Hedges's *g* effect sizes contrast IMFU scores between workshop and assessment-only participants. For the workshop condition, Baseline *n* = 68, IMFU *n* = 36. For the assessment-only condition, Baseline *n* = 70, IMFU *n* = 35. IMFU *n* = 1-month follow-up; CI = confidence interval; DASS-D = Depression Anxiety Stress Scales-Depression subscale; DASS-A = Depression Anxiety Stress Scales-Anxiety subscale; DASS-S = Depression Anxiety Stress Scales-Stress subscale; NFFI-N = NEO Five-Factor Inventory-Neuroticism subscale; NFFI-E = NEO Five-Factor Inventory-Extraversion subscale; BAS = Behavioral Inhibition and Behavioral Activation Scales; Behavioral Activation subscale; Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire; MEAQ = Multidimensional Experiential Avoidance Questionnaire; ERQ-R = Emotion Regulation Questionnaire-Reappraisal subscale.

**p* < .05.

Within- and between-condition effect sizes are presented in Table 1. Statistically significant, small effects on neuroticism, quality of life, and experiential avoidance (all in the expected direction) were observed in the workshop condition from baseline to 1MFU. Although absolute values changed in the expected directions on all measures for participants who attended a workshop, no other within-condition effect sizes reached statistical significance. In terms of between-condition comparisons, the observed 1MFU means favored superior functioning for workshop participants on all measures with one exception (behavioral activation). However, only one between-condition effect size reached statistical significance; workshop participants reported significantly greater improvements in quality of life than assessment-only participants by 1MFU.

Discussion

The present study was focused on the development of a novel, single-session, transdiagnostic preventive intervention for young adults at risk for anxiety and depression (and consequently, other related emotional disorders). Results suggest that the UP, a treatment designed to address temperamental processes underlying emotional disorders, can be adapted to a one-session, preventive format that is highly acceptable and satisfactory to undergraduates. This intervention also appears to successfully convey information about adaptive emotion management. At present, there is not sufficient evidence to conclude with certainty that the intervention immediately reduces symptoms of anxiety and depression. Overall, findings are promising with regard to this approach to preventing anxiety and depression within a college setting, and warrant future studies designed to examine intervention efficacy.

It is worth noting that approximately 70% of students who were screened reported either elevated or clinical levels of symptoms. Along with evidence that rates of psychopathology are rising on college campuses (CCMH, 2016), these data underscore the need for novel, efficacious, and scalable interventions geared toward preventing subclinical symptomatology from fully manifesting among young adults. The transdiagnostic UP may be particularly well suited to efforts in this area, given its focus on adaptive responding to the full range of universally experienced emotions (e.g., fear, anxiety, sadness, anger, joy) and thus broad applicability. The UP also seeks to address underlying temperamental dimensions (namely, neuroticism) that render individuals vulnerable to the development of all emotional disorders, rather than disorder-specific symptoms, which strengthens its relevance to a prevention context. Results showing that the UP-based workshop was associated with small, yet statistically significant reductions in neuroticism at

IMFU are consistent with this aim. The brief format of the intervention tested here may be more time-efficient and cost-effective than existing lengthy, multisession protocols, which suggests its potential to be seamlessly integrated into university and CCC settings.

Limitations

A number of limitations must be acknowledged. First and foremost, our primary aim in this study was to determine proof-of-concept for a novel intervention; thus, given the small sample size and very short follow-up period, we cannot yet draw conclusions about outcomes associated with the workshop. Of note, though all absolute values changed in the expected direction among workshop participants, six of nine within-condition effects did not reach statistical significance. There was also only one significant between-condition effect (quality of life) at the IMFU. Our observation of relatively few statistically significant within- and between-condition effects may be due to several factors. Chiefly, the small sample size is an important factor to consider given that prevention research generally requires larger sample sizes than treatment studies to see statistically significant effects, and poor retention compounded this challenge in the present study. Furthermore, given that subclinical symptoms may wax and wane in the development of emotional disorders, our follow-up period was likely too short to reliably detect any distal effects on symptoms. The clear next step is to conduct studies adequately powered to observe statistically significant effects (if present) in comparison with a control condition, and measure outcomes over longer time periods. The possibility also exists that a single, 2-hr program, particularly without booster material or follow-up contacts, may be *too brief* to enact meaningful change. In other words, the low dose of the intervention under study may have contributed to the relatively few significant within- and between-condition findings.

In addition, approximately one third of participants did not attend a workshop. Given that we did not assess reasons for nonattendance, it remains unknown whether this was due to scheduling conflicts, students who were struggling to manage their workloads and/or becoming increasingly symptomatic being less likely to attend, or other factors. It is possible that students who attended the workshop were more open to receiving mental health interventions and thus more likely to benefit. Studies that examine effects of the workshop when delivered to potentially less receptive students (e.g., as a mandatory course to all incoming freshmen; see the "Future Directions" section) may result in lower acceptability ratings and/or weaker intervention effects. Along these lines, we may observe the greatest impact of the

workshop when delivered to students actively seeking treatment at their CCC. We were also unable to conduct more frequent or ecologically valid assessment after the workshop. Utilizing ecological momentary assessment (EMA) methods to capture emotional experiences in daily life would have improved our understanding of how and when participants used strategies presented during the workshop. Finally, our sample largely identified as female (75%) and Caucasian or Asian/Pacific Islander (87%), which affects the generalizability of results. It is critical that future studies prioritize enrollment of all groups at risk for these common mental health disorders.

Future Directions

This research poses several possible areas for future work on preventing emotional disorders among young adults. As previously noted, this brief, transdiagnostic prevention program may be well suited to stepped care approaches for addressing emotional disorder risk and reducing clinician burden and treatment waitlists within CCCs. Studies that examine the effects of such a treatment model on a broad range of clinical and functional outcomes (e.g., academic performance, rates of graduation, medical leaves, involvement in extracurricular activities on campus), as well as other relevant variables such as student retention at CCCs and clinician burnout, must be conducted to provide empirical support for such a notion.

Second, incorporating this intervention into college-based settings other than the CCC is worthy of consideration. For example, this workshop could be offered through university health and wellness centers, dormitories, or fraternities/sororities, and framed as “life skills” training rather than a clinical intervention. Given the stigma associated with seeking or receiving mental health treatment among undergraduates (e.g., Eisenberg, Hunt, & Speer, 2012), this may bolster student participation. Integrating this workshop into required orientation programs for incoming freshmen and/or classroom settings is another direction to consider. This option may have the potential to more seamlessly integrate into the existing infrastructure of a college or university. Delivering the intervention in this way may also normalize the experience of emotional difficulties during a stressful transition point in students’ lives and reduce associated stigma. It is our belief that the emotion management skills presented during the UP workshop are widely applicable and potentially beneficial for all students, regardless of anxiety or depression levels. Evaluations of the intervention within the context of ongoing orientation programs and/or required coursework may improve rates of attendance and completion of follow-up assessments, which are critical for advancing our understanding of intervention efficacy.

Once the efficacy of this new transdiagnostic intervention has been established, electronic (e.g., web-based) delivery formats may also be more easily disseminable across a broad range of CCC and other university settings, and thus have the capacity to reach more students (e.g., Musiat et al., 2014). The live, in-person workshop format utilized in this study requires resources that may not be available in every CCC or institution. Furthermore, with a computerized program that students can access at their convenience, the logistical barriers associated with scheduling and attending live workshops are reduced, and standardization of content is guaranteed.

As previously discussed, the study intervention was delivered as a single-session 2-hr workshop—a notably less intensive format than most existing preventive programs for anxiety and depression. Incorporating innovative methods to help extend intervention content beyond the workshop itself may help maximize the potential for change. For example, adding a smartphone-based ecological momentary intervention (EMI) corresponding to workshop content may help attendees better (and more regularly) apply recently learned emotion management strategies in their daily lives. Future studies that aim to identify the ideal balance between brevity and inclusion of sufficient content, as well as the best modes for skills consolidation and practice, in preventive interventions are needed to shed light on these issues.

As previously described, the intervention under study conveyed principles distilled from the UP, a transdiagnostic treatment that seeks to target neuroticism—a temperamental dimension that underlies and predicts a broad range of emotional disorders and functionally similar conditions (e.g., Barlow et al., 2014; Zinbarg et al., 2016). In future studies, it may be more in line with the theoretical underpinnings of the UP to identify young adults with elevated levels of neuroticism (rather than surface-level symptoms of anxiety or depression) as candidates for workshop participation. Furthermore, given preliminary evidence that the UP may be efficacious for other related problems that often co-occur with anxiety and depression (e.g., substance use disorders, Farchione, Goodness, & Williams, 2017; eating disorders, Thompson-Brenner et al., 2018), future research should explore the impact of this brief preventive intervention on these comorbid conditions.

Conclusion

This study marks the first evaluation of a brief, transdiagnostic preventive intervention for young adults at risk for emotional disorders. Results are promising in terms of the acceptability and feasibility of this broadly applicable intervention, and support the need for future research to evaluate its efficacy in larger samples and over longer periods of time.

Declaration of Conflicting Interests

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Note

1. Percentages sum to over 100 as participants could select more than one response.

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David H. Barlow is a professor, founder, and director emeritus of the Center for Anxiety and Related Disorders at Boston University. He has published more than 500 articles and chapters and more than 60 books, and his research has continuously been funded by the National Institutes of Health for 40 years.